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(Original Official Organ U. S. Vet. Med. Assn.)

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H. Preston Hoskins, Secretary-Editor, 735 Book Building, Detroit, Mich.

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COOPERATION

Now this is the law of the Jungle—as old and as true as the sky;
And the Wolf that shall keep it may prosper, but the Wolf that shall break it must die.
As the creeper that girdles the tree trunk, the law runneth forward and back—
For the strength of the Pack is the Wolf, and the strength of the Wolf is the Pack.

—Kipling.

On more than one occasion we have heard the statement, "The only good county agent is a dead one." Having had intimate, personal contact with a number of county agents, during a five-year connection with a state agricultural college, we can readily account for the feelings of anyone who would make the above statement. But times are changing. From evidence on all sides, it would appear that an entirely different type of man is represented in some of our present-day county agents. The type to which we refer is the man who has enough balance to see the folly of posing as a veterinary encyclopedia on wheels, and sees the desirability, yes the necessity, of working with the veterinarian, and not against him or in competition with him.

There has been fault on both sides, and many veterinarians

have been guilty of antagonizing county agents, sometimes through lack of tact, sometimes through actions resulting from misguided advice, and sometimes through open warfare. As stated before, such instances are becoming less frequent, and there are many signs of both parties getting down to business, and pulling in the same direction. In fact there are evidences of increasing degrees of whole-hearted cooperation on all sides. The veterinarian can help the county agent in many ways, and the opportunities for the county agent to do the veterinarian a good turn are even more frequent.

Not so very long ago we saw county agents and veterinarians, shoulder to shoulder, fighting against what both considered undesirable legislation. This is as things should be. Our interests are often mutual. From a county farm bureau in another state, we have additional confirmation of the belief that cooperation is not only possible, but apparently desired, by all interested parties.

The present cooperation is being fostered by a farm bureau whose farm adviser is authority for the following statement: "The officers of the ..... Farm Bureau have always been against the Farm Bureau taking up veterinarians' duties, but some of the veterinarians in the county failed to see and read conditions and a large percentage of our membership became so disgusted that they forced us to take up the serum work."

When this same farm adviser proposed to take up some cooperative work that would be of immense benefit to the veterinarians in the county, the Executive Committee hesitated. They feared the criticism of some of their members, who were of the opinion that veterinarians were non-essentials, as far as the live stock industry was concerned. The best this farm adviser could get was permission to send out a letter, calling attention to the fact that there were certain diseases which called for the services of a competent veterinarian.

Additional concrete evidence of the growth of this cooperative spirit is seen on a postal card which is being mailed by another county farm bureau to all swine breeders in the county. This card calls attention to a few facts in connection with infectious abortion of swine, and bears this caption:

> *"The presentation of this card to your local veterinarian entitles you to free office consultation and advice on abortion disease in swine."*

This looks like business. Another county farm bureau has sent out a similar card, but bearing a slightly different message as follows:

"The local county veterinary association has agreed that any member of its association will give a free office consultation and advice on the disease referred to on the reverse side of this card."

In this case the disease referred to is bacillary white diarrhea of chickens. The card calls attention to the fact that this disease may be recognized in mature breeding stock by the "serum agglutination test," and carries the caption

CONSULT YOUR VETERINARIAN

These cards are gotten up by the Laboratory of Animal Pathology and Hygiene, of the University of Illinois, and are printed in furtherance of the Agricultural Extension Act of May 8, 1914. If you are interested in this kind of cooperation, and wish further information relative to how it is working out in Illinois, communicate with Dr. Robert Graham, University of Illinois, Urbana.

"THE PASSING OF A GREAT MAN"

To those whose horizon extends beyond national boundaries the passing of Dr. John Gunion Rutherford, C. M. G., brings more than an ordinary feeling of sorrow. In his death the veterinary profession throughout Canada and the United States sustains and feels a sense of loss such as comes only when one or its greatest and noblest members is taken. Of outstanding ability and genuine personality he was known throughout Canada as one of her foremost public men.

The final chapter in his life was completed by the tributes of respect shown by his many friends and admirers when he was laid to rest in Beechwood Cemetery, at Ottawa, on Thursday, July 26th, 1923. Rarely has such a fitting testimony of esteem been evidenced as that of the cortege which accompanied him to his last resting place. From every sphere of life men gathered to do homage to a distinguished citizen.

Dr. Rutherford was always loyal to his profession and nothing ever deterred him from attending a gathering of veterinarians, thus maintaining a close contact with the profession at all times. He was a staunch friend of the College from which he graduated and could always be relied upon to attend any function. His

addresses to the student body were always a great attraction and long remembered by those who had the privilege of hearing him. At the official opening of the new institution, at Guelph, on the 25th of November last, he delivered the leading address. He was a good public speaker and was in frequent demand at gatherings on account of the delightful manner in which he discoursed. He generally had something worth while to say and his comments on various aspects of life were always shrewd. His kindly humor and geniality were a delight, and his sturdy philosophy was a thing to be prized by those whose privilege it was to come in contact with him. After all, his greatest pleasure in life was his chosen profession and he never missed an opportunity of advancing its interest.

In the passing of John Gunion Rutherford we mourn "a really great man," a veterinarian in the highest degree and loyal to his profession throughout, the most distinguished and brilliant official that the Department of Agriculture in Canada ever had, and one of the most outstanding public men in Canada, whose name throughout the length and breadth of the land was referred to as the embodiment of a good citizen and an honorable life devoted to the best interests of his country and his fellowmen.

"Know thou, O stranger to the fame,
Of this much lov'd, much honour'd name,
For none that knew him need be told,
A warmer heart death ne'er made cold,
The friend of man, the friend of truth,
The friend of age, and guide of youth,
Few hearts like his, with virtue warm'd,
Few heads with knowledge so informed."

—C. D. McG.

CONVENTION REPORT NEXT MONTH

As this is being written all signs point to a splendid meeting at Montreal. The program has been completed, with only a few minor alterations as published in the August issue, assuring a well-balanced literary and scientific treat for every member, be he practitioner, sanitarian, teacher or investigator.

As we compare this program with those of former years, we are impressed anew with the changes which are taking place in veterinary science. Perhaps the change in the character of our

annual programs is even greater than the actual change in our professional activities. This is only natural, however.

The meetings of the American Veterinary Medical Association afford opportunities and occasions for the presentation and discussion of problems which are national or international in character. The time has come when strictly state and local problems can no longer take up the time of those who go hundreds, in some cases thousands, of miles to attend these annual meetings of our great Association.

This statement is not to be taken in the sense that the American Veterinary Medical Association is not interested in local problems. On the other hand the A. V. M. A. is and always has been interested in all problems confronting the profession, whether they be small or large, local or general. The officers believe that many of the smaller problems can be solved at home, however, and much more satisfactorily, with the assistance and counsel of the national association, through its officers and committees. Therefore, we believe that all veterinarians would do well to have a more nearly correct conception of what the A. V. M. A. is and what its scope and functions are.

No association can ever be any more than what its members make it. If each member would continually keep in mind the fact that he is a spoke in a big wheel, and that this wheel will turn steadily and evenly only as long as each spoke is functioning, then we will have a better and more useful organization, then we will hear less grumbling and fault-finding, and then, just as sure as night follows the day, we will all be happier, busier and more contented.

Watch for the October number. It will contain a very comprehensive report of the Montreal convention.

COMING VETERINARY MEETINGS

Massachusetts Veterinary Association. American House, Boston, Mass. Sept. 26, 1923. Dr. C. H. Playdon, Secretary, Reading, Mass.

New York City, Veterinary Medical Association of. Academy of Medicine, 17 W. 43rd St., New York, N. Y. Oct. 3, 1923. Dr. C. G. Rohrer, Secretary, 40 W. 61st St., New York, N. Y.

Dixie Veterinary Medical Association. Memphis, Tenn. Oct. 10-11, 1923. Dr. C. C. Brown, Secretary, Union Stock Yards, Memphis, Tenn.

THE FUTURE PLACE OF THE ACCREDITED VETERINARIAN IN THE ACCREDITED-HERD PLAN[1]

By J. A. KIERNAN, *Washington, D. C.*

Chief, Tuberculosis Eradication Division, Bureau of Animal Industry, U. S. Department of Agriculture

Your worthy secretary invited me to attend and address the Missouri Valley Veterinary Association, and I assure you that I appreciate the honor.

It is needless to remind an audience like this of the importance of eradicating tuberculosis of live stock. Our cattle and swine on farms on January 1, 1923, were valued at more than three billion dollars ($3,044,626,000.00). It is perfectly natural that the live stock owners of America should protect an interest of such magnitude. Especially is this so with respect to the ravages of tuberculosis—an eradicable disease. The reason live stock owners demand that a vigorous campaign be waged against tuberculosis is perfectly obvious. If it were a matter that made no financial difference to the producers of cattle and swine there would probably be no great demand to check the progress of the disease, but the losses sustained annually by reason of the condemnation of carcasses of cattle and swine by meat-inspection services—national, state, and municipal—have made a strong impression on the minds of those persons who raised these animals, the ones who fed them, and the purchasers of those apparently healthy animals that are condemned as unfit for food. All these interests, suffering financial losses mutually, have united in an energetic effort to check the constant and ever-increasing loss. The death of an animal on the farm occasionally is expected, but when the farmer puts an entire crop of alfalfa and corn into cattle and swine, he sustains a great shock when, after shipping them to market, he learns that a considerable percentage of them were condemned on account of tuberculosis.

During the fiscal year 1922 there were condemned for tuberculosis, under federal inspection, about thirty-two and one-half million pounds of beef and pork. Sentiment among the live stock interests became crystalized several years ago and resulted in the appearance before Congress of a committee requesting

[1]Read before the thirtieth annual meeting of the Missouri Valley Veterinary Association, Omaha, Nebraska, July 23-24-25, 1923.

the appropriation of federal funds to aid state live stock sanitary officials and individuals in the suppression of tuberculosis.

I want to emphasize the feature of the genesis of cooperative, tuberculosis-eradication work in the United States. It was due to the demand by the live stock owners that the Bureau of Animal Industry was directed by Congress to take up the work. The subject of eradicating the disease had been debated at many gatherings of veterinarians in various sections of the United States for a number of years. Measures of control and suppression have been in operation in several of the states for a considerable period of time. In some states the plan of operation was confined to the physical examination of herds and the elimination of spreaders of tuberculosis when they reached the recognizable stage, which is in most instances an indication that those are not the only animals in the herd that are infected.

Many have pondered over the question of how long or how far an owner would get in control of tuberculosis by that method. It is believed that to depend upon the physical examination of cattle, as a sole means of controlling tuberculosis, leads ultimately to a herd of cattle which is 100 per cent infected. On the other hand a number of states were signally successful in keeping the disease under control by the use of tuberculin and since the campaign has developed into one that has for its object the entire elimination of the disease, such states are in a most fortunate condition.

The Basis of tuberculosis Eradication

The controlling of the tuberculous cow is the basic foundation upon which any campaign for the eradication of tuberculosis must be built. To permit the tuberculous animal to move hither and yon is an assurance of the spread of infection, and any campaign which contemplates the eradication of the disease under such existing conditions is due, most assuredly, to fail. A study of the spread of infection within the United States is most interesting, but it differs little from the conditions brought about by the movement of tuberculous cows within the state or county, or from herd to herd. The tubercle bacillus can accommodate itself in any clime under almost any condition, if it can only find suitable media upon which to develop and the ideal condition for its propagation is in the animal body. A herd of cattle located within a county in which 50 per cent of the herds are tuberculous, may be maintained on a healthy basis, providing no animals are

introduced and the infection is not carried on to the farm in any of the ways it is possible for it to be introduced. On the other hand, a tuberculosis-free herd in the State of Utah, wherein tuberculosis of cattle is known to exist to less than one per cent at the present time, may become deeply involved with the disease, providing a tuberculous cow is introduced into that herd, and is a source of the spread of infection. Under certain circumstances favorable for the development of the disease, in that herd within a period of a year 50 per cent of the animals may be involved.

Shall I trespass upon your time to call attention to the facts that are well known to you of the danger of the tuberculous animal? There are those who believe that the disease can be controlled by allowing tuberculous animals to be associated with healthy animals, provided a regular physical inspection is made and the advanced cases removed from the herd. If I understand the sentiment of the live stock owners of the United States, they do not want to trifle with the tuberculous cow, as is indicated by the very small number of segregated tuberculous herds maintained in the country. You may call it a sacrifice, or a waste of valuable animals, or ruthless destruction, or disregard for the posterity of the respective breeds of cattle. or whatever else you may desire, but, notwithstanding the fact that many states permit the keeping of tuberculous animals under segregation on the farms, there are, comparatively speaking, but few such herds maintained in the United States. Since this campaign began approximately one-fourth of a million tuberculous cattle have been officially destroyed.

City People Drinking More Milk

According to a recent statement by the Department, the quantity of whole milk used in 1921 was approximately 99,000,000,000 pounds, which includes 45,000,000,000 pounds consumed as milk. Nearly 103,000,000,000 pounds of whole milk—about 4 billion pounds more—were used in 1922 in the production of butter, cheese, ice cream, milk chocolate and various other products, including 47,000,000,000 pounds consumed as milk. Notice that one-half of the 4 billion pounds increase was consumed as milk.

Tuberculosis in Calves

There is another reason why the course that is being pursued is more desirable than the holding for indefinite periods of tuber-

culous cattle on farms where tuberculosis-free cattle are maintained. I refer to the danger of continued infection by calves from tuberculous cows held in segregation. Many of us were taught that tuberculosis of prenatal origin was unknown, but that the offspring of a tuberculous mother was predisposed to the disease. We have data which proves beyond question that in some localities, at least, calves from two days old to two weeks old are affected with generalized tuberculosis. From one small meat-inspection establishment, 23 cases of generalized tuberculosis in young calves were reported in five months. This should be an interesting point, because at several of the examinations for accredited veterinarians a question was asked about the necessity for testing calves and at least 50 per cent of the answers were that calves under six months of age need not be tested. The records show that in infected herds more than three per cent of the calves under six months of age are tuberculous. It is considered advisable to test all the cattle in the herd.

Role of the Accredited Veterinarian

As I perceive the future place of the accredited veterinarian in the accredited-herd plan, there is no room for pessimistic thought. The part that each shall play will depend on the individual, upon his standing in the community, his skill, the confidence he can inspire in the owner of the accredited herd and his general business ability.

The accredited certificate will not change the holder of it. It will not convert the outstanding veterinary practitioner into one of mediocre ability, nor will it make a striking success of the veterinarian of small ability and restricted opportunity. As the work progresses it will mean an expanding field of activity for the accredited veterinarian. In many states, at the present time, the effect of the work has been beneficial to the local veterinarian, as set forth in the following excerpts from letters received by the U. S. Bureau of Animal Industry.

Wisconsin

"I feel that the campaign has put the veterinary profession before the eyes of the public, such as it has never been before, and one might get about the same distance in taking away the highways in this part of the state, as one would by eliminating the tuberculin test. Just to illustrate how the people feel about the project in Holcombe Township, Chippewa County, would state that at one time Holbombe had more accredited herds than any other township in the county, and all but three have had their herds reaccredited."

"The year prior to the area test made by the combined forces of the state and government I tested about 500 cattle for tuberculosis. Last

year I tested 5,000 head. This increase was entirely due to the area test and the accredited-herd work done the two previous years."

"I can say that my tuberculosis-eradication work has increased considerably since the adoption of the cooperative work. At first I thought that the inspectors sent into my territory would take my business from me but I now see where they have made more business."

NEW HAMPSHIRE

"The accredited work has cut down my income to quite an extent. First—as the appropriation is all taken up, it leaves no money to pay for tuberculous cattle tested by the private veterinarian. Therefore, farmers are not making private tests when they can get nothing from the state, and I did a great many tests before this came into effect. Now I have answered your question fairly and squarely. Now, please do not think from this that I am one of the chronic grumblers, for I *am not*. My heart is in the work and I believe the accredited work is a great step toward cleaning up our county of a deadly menace."

"My relations with the veterinarians in this section are of the pleasantest nature and we have had no clashes whatever in the matter of charges or the encroachments on one another's territory. We have arrived at the following schedule of prices for the test on accredited herds, viz:

From one to five animals	$ 5.00
From five to ten	7.00
From ten to fifteen	10.00
From fifteen to twenty	15.00

Above twenty, 50 cents a head up to 50.
Over that number, a reasonable discount.

These prices are conditional upon there being herds enough in a reasonable area having the test at the same time, thus enabling the veterinarians to inject and observe quite a number at the same time. The charge is, of course, for the intradermic test only. Where the subcutaneous is called for, the charge would have to be increased.

"To sum up, I am strongly in favor of the cooperative test and am always ready to assist you in carrying out the work in any way in my power. I have benefited in many ways from the work as carried on. The conferences held each year, and which I have attended, have been of great value to me from an educational point. My business has been increased, directly due to the work, and altogether I am strong for it. It is now thirty years since I made my first test and I have seen much change in the way it is done and have wished many times that I might never see a cow's tail or thermometer again, but the smoke went up the chimney just the same."

MASSACHUSETTS

"I am doing more tuberculin test work than at any previous period and I see some increase in the cattle practice, probably due to coming in closer touch with the owners through tuberculin testing."

NORTH DAKOTA

"The cooperative, tuberculosis-eradication work in my vicinity is an asset to me."

NEW YORK

"The N. Y. State Department of Agriculture has more accurate figures: The loss of cash work has made a difference of $2,500 to $3,000 in my business. Since turning over herds I formerly tested, to the Department, not a single one has been tested by me since."

"In reply to your request of May 31, 1923, I would say that the accreditation work has increased my tuberculin testing probably 4 or 5 fold in the last 2 years."

INDIANA

"I realized over $500.00 from T. B. work so far this year, and expect it to increase each year."

TENNESSEE

"While the work was being carried on here the farmers and dairymen seemed to be more interested in building up their herds and more interested in live stock industry than ever before; of course to stimulate the live stock and dairy industry would automatically increase the veterinarian's practice. I would much rather have the practice in a section where there is eradication work being done by the Bureau and State, than the practice in a section where the work is not being done."

"In answer to your inquiry about the effect cooperative, tuberculosis-eradication work is having on private practice, will say that I do not see very much change either way. Of course there is some of this work I would get to do if it was not done through the cooperative plan, but on the other hand there is no doubt in my mind that this work has stimulated the dairy interest at this place and caused an increase in value, especially of dairy cattle, by attracting buyers from other states. Possibly this is due to the fact that all cattle in this entire county have been tuberculin tested."

OKLAHOMA

"Your force has injured my practice in dollars and cents because you have tested just the herds—dairy, etc., that were forced to test by law. These men did not care for accredited herds; all they wanted was to get the work done for nothing and they have."

NORTH CAROLINA

"As a practitioner I could not convince the farmers that their cattle should be tested for their own and their neighbors' protection, as it would appear to them that my only interest in such testing was the fee for this work. Now that the tuberculin testing of cattle is under the supervision of the state and federal governments the farmers and dairymen are being educated to the importance of the tests and the breeding of better cattle. I have occasional calls from sections of the county to which I have never been called before and I am sure that I gain these new clients through the educational work of the inspectors while testing the cattle in that section. I did more tuberculin testing last year than any previous year, although the inspectors were working in the county. I can fully realize the increase in the amount of tuberculin testing which I will be called upon to do after this county shall have become accredited."

VIRGINIA

"If it had not been for T. B. work I would have been looking for a job in some other line. I did not test a cow in the first 5 months of 1916. P. S.—On the strength of my T. B. work I have just bought a new Chevrolet."

"It has increased my practice about $1200 per year by the inauguration of the campaign. It has increased my standing along other lines, as I find that the more a live stock owner finds you are looking after his interest the more dependence he puts in you."

SOUTH DAKOTA

"In regard to the accredited-herd work it surely has made me a wonderful success in my practice. It not only helped me in the accredited work, but it caused several individuals to be more easily influenced to do private testing. It made a great deal of difference in my financial earnings."

There are a number of sections in the U. S. in which the dairy industry is quite an important one, where, prior to the inauguration of the present campaign for the eradication of tuberculosis,

little or no tuberculin testing was done. The live stock owners did not believe in it. After cooperative work started in one locality, as above described, a private veterinarian complained to me that the salaried men were taking away his business. When questioned as to the number of herds he tested annually, he stated that there were three or four, but that the State and Bureau inspectors had taken them away from him because they did the testing free of charge. He further stated that there were around 400 herds in that locality, principally of the dairy type.

After practicing in that territory for almost 30 years he had built up a tuberculin-testing business which comprised only three or four herds and the other veterinarians in that locality did little or no testing. Since the work was inaugurated, many herds have been accredited in that section and turned back to accredited veterinarians, and one of the statements read here today was from an accredited veterinarian in that locality. Surely this campaign can not injure veterinarians in localities where previous to taking up this work they did no tuberculin testing.

I will freely concur with the statement frequently made that owners who heretofore employed veterinarians to test herds annually, willingly turned them over to State and Bureau inspectors to test because the work is done free of charge. Most of them, however, take that action because they are desirous of having their herds placed on the accredited list. It is not in the interest of the private veterinarian, of course, when owners turn herds over to official veterinarians to test, because it deprives them of the fee for the work, but under the accredited-herd plan as it operates today, the accredited veterinarian may do the initial test of accredited herds, and every other test, except the final test to accredit the herd. The final test must be a combination test, made by an official, regularly employed veterinarian.

Several months ago the Secretary of Agriculture approved the recommendation made by the Chief of the Bureau, at the instance of the U. S. Live Stock Sanitary Association, that Federal indemnity may be paid for tuberculous animals disclosed by tests made by accredited veterinarians, not to exceed 15 per cent of the allotment of the total Federal allotment for indemnity in any state. I am sure that I express the views of the Chief of the Bureau and of all the state officials in saying it would be much more desirable if the funds available for the payment of indemnity for tuberculous cattle were sufficient to pay for all cattle condemned by accredited veterinarians.

Unfortunately, such a plan can nôt be put into operation, due to the inadequacy of funds available. There are 450 county, state and federal veterinarians engaged in the cooperative campaign. In all probability the funds made available by the respective legislatures for indemnity will not be sufficient to keep these employes continuously engaged during the entire fiscal year. I am sure that it would not be sufficient if they were all engaged in area work. Now, let us calculate how long these funds would last, providing in addition to employes above mentioned, the 5,215 accredited were authorized to test all the herds whose owners are desirous of having the work done. The funds would be exhausted within a period of a few months.

The question may be asked why not obtain sufficient money to carry on the work in that way. I am sure that those of you who are familiar with state legislatures will appreciate the fact that every effort is being made to curtail appropriations for all activities, regardless of their value. Federal indemnity will be paid on tests made by accredited veterinarians during the current fiscal year in approximately 30 states. You know there are some states engaged in tuberculosis-eradication work in which no indemnity is paid for reacting cattle. Of course, in such states, every available veterinarian may test all the herds that come to him, but it is a fact that they do not test many herds in those states until after the official work is inaugurated. That system seems to call the attention of the live stock owners to the value of having their herds free of tuberculosis.

I could cite many instances where local veterinarians did little or no testing in states where indemnity is not paid, until after cooperative work began. It seems only reasonable to anticipate that there will be a great amount of work for accredited veterinarians to do in looking after individual accredited herds, and in keeping up the testing of herds in areas from which the disease has been eradicated.

The Accredited-Herd Plan

This plan, as you know, was adopted by the U. S. Live Stock Sanitary Association, in December, 1917. It provides for the accrediting of individual herds which pass two successful annual tests. On June 1, 1923, there were 27,000 accredited herds; in addition there were 299,226 once-tested, free herds; and in all 425,425 herds, with an aggregate of 4,304,213 cattle under supervision for eradication for tuberculosis.

The Area Plan

In outlining the plan of operation in 1917, area work was contemplated, and was described at that time as eradication of tuberculosis from circumscribed areas. No attempt was made then to launch that idea; it was held in reserve until it was believed the proper time to advocate it. In due course of time it seemed proper to start the work on that basis, and a number of state veterinarians inaugurated the work in their respective commonwealths. The area plan contemplates the eradication of tuberculosis from live stock within the geographical lines agreed upon, usually a county. That means that all the herds and all the cattle shall be tuberculin tested, that the reactors shall be branded and held in quarantine until destroyed in accordance with the regulations. This work, as well as all other phases of the regulatory work, is done under live stock sanitary regulations of the respective states. The Bureau of Animal Industry is a cooperating agency and works only on the invitation by the state to participate in the campaign.

There are two features of the area work that are deserving of attention. First: Testing of cattle in a township. This requires the services of only two or three veterinarians. The other method is to conduct a drive in a county; that is, to put in a sufficient number of veterinarians to test all the cattle within a period of two or three weeks. In counties where there is a limited amount of tuberculosis it is entirely satisfactory to conduct a drive. There are usually detailed about 30 or 40 veterinarians, including the local practitioners, if they desire to participate in the drive. However, in localities where there is a high percentage of the disease, this can not be done on account of the enormous cost of indemnities.

Two Hundred Counties Engaged

There are at the present time more than 200 counties engaged in area work in the United States. In practically all these counties 100 per cent of the cattle are tested. It has become quite a common practice in area work for the County Board of Commissioners to employ one or more veterinarians to devote their entire time to testing.

Our experience has been that it has been to the interest of the local practitioners to aid in such campaigns. A number of local men have taken part in these drives and thus became acquainted with a large number of live stock owners. The area plan is

growing in popularity and it is believed that eventually the campaign will resolve itself into that one project, because of its superiority in many ways to the accrediting of individual herds. The work can be done more satisfactorily and there is less danger of reinfection. In short, it appeals to the live stock owner as the most practical method of making progress against tuberculosis.

Modified Accredited Area

In accordance with the plans of the uniform, accredited-herd work, whenever all the cattle in a county have been tuberculin tested and tuberculosis is reduced to not more than one-half of one per cent of all the cattle in the county, that county may be recommended to the U. S. Secretary of Agriculture, who has agreed to place it in what is known as the modified accredited area, and cattle from such area may be shipped interstate, at any time and for any purpose, without being tuberculin tested, providing a permit is obtained authorizing the transportation company to receive such shipments.

At the annual meeting of the American Institute of Meat Packers, in 1922, a resolution was adopted to the effect that when hogs are shipped for slaughter to market points from modified accredited areas, the packers have agreed to pay a premium of ten cents per hundred for same, providing they are found free of tuberculosis. In order to prevent reinfection among the herds in the modified accredited area, the various states have adopted regulations requiring the tuberculin testing of all cattle moved into such areas, regardless of whether they be intra- or interstate shipments. Modified areas should prove of great value to live stock owners and others connected with the industry.

A Public Health Question

At the outset of the cooperative campaign, the public health side of the question was not discussed because it was believed that the economic reasons for eradicating the disease were apparent to all and sufficient to carry on the work as rapidly as it should go. When it became necessary to test dairy herds furnishing milk to towns and cities, the question came to the front rapidly,—Why is it necessary to test these cattle? Is milk from tuberculous cattle a source of disseminating tuberculosis? The question could not, and should not, if it could, have been evaded in the light of what has transpired in the last five years.

I have no hesitation in saying that the veterinary profession

would be totally remiss if it did not take this great opportunity to work hand in hand with the great cooperating forces that are striving to ameliorate man's sufferings, due to tuberculosis. The veterinary profession can play and is playing a very important part in controlling tuberculosis in the human family, through its work in eradicating bovine tuberculosis. At the meeting of the National Milk Conference, held in London, England, October 16 to 18, 1922, these prophetic words were uttered by Mr. Nathan Straus, of New York, who has devoted half of his life and half of his great fortune in an effort to supply safe milk for human consumption in the city of New York. Said he:

> "I crossed the Altantic and I lost a child, and although that was over forty years ago, I have never gotten over it. If I knew what I know now I would have my daughter. Now do you realize why I take things so seriously?"

Mr Straus' great efforts have been directed to the advocacy of the pasteurization of milk, to render it safe for human consumption. It is well that a philanthropic soul should have engaged in such a humanitarian enterprise. It is well, however, that this noble worker took up this great work, for the milk that was pouring into New York City in 1912 needed pasteurization, or sterilization, or boiling, because investigations made by Hess at that time showed that sixteen per cent of the samples analyzed, contained living, bovine tubercle bacilli.

We are sometimes told that it is commonplace and ancient history to call attention to the existence of bovine tuberculosis in the human family, but as late as October, 1922, the British Government saw fit to place on the program of the National Milk Conference, Dr. A. Stanley Griffith, Research Bacteriologist, with the British Research Council of the University of Cambridge, whose subject was "Bovine Tuberculosis in Relation to Man." Dr. Griffith was on the royal commission to investigate the relationship of bovine tuberculosis to man, after pronouncements made by Professor Koch that he had come to the conclusion that human tuberculosis differed from bovine tuberculosis and could not be transmitted to cattle and that transfer from cattle to man never took place—that this transfer was so rare that he did not deem it advisable to take measures against it.

Dr. Griffith has probably typed more tubercle bacilli than any other authority. He states in his classical essay, which I hope all of you will have the privilege of reading, that "the number of English cases in which the type of tubercle bacilli has been determined now exceeds 1,200." In 116 cases of all ages 46.5

per cent of the bacilli were identified as of bovine origin; 25 per cent of the cases were in persons sixteen years and upwards.

Some of the noteworthy statements made by Dr. Griffifth are as follows:

1. The bovine tubercle bacillus produces generalized tuberculosis in every way as severe as that produced by the human bacillus.

2. The proportion of cases where tuberculosis remains localized in the mesenteric glands is not greater in the bovine series than in the human.

3. Primary abdominal tuberculosis due to the human tubercle bacillus is infrequent.

We certainly must be interested in all of these investigations because they apply in our everyday life. When we appear before a local audience, or committee, or state legislature or other legislative body, and lay before them the facts regarding the transmissibility of tuberculosis to man, we do not infringe upon the rights of the medical profession, in my judgment. The veterinarian is familiar with the etiology, the pathology and mode of dissemination of tuberculosis in live stock, and knows of its relationship and its ability to affect man; therefore it is his duty to state these facts whenever the occasion requires.

At the several tuberculosis-eradication conferences held during the past five years, medical authorities have accepted invitations to address the veterinarians on the relationship between animal and human tuberculosis, and all of them have encouraged the veterinarian to lend his assistance in every way in helping to solve the human side of the question. As Col. Ousley said in his illuminating address at the St. Louis meeting of the A. V. M. A.:

> "After all, a veterinarian is something of a missionary, and he is warranted in doing something more than sitting on his dignity and awaiting calls from an uninformed populace. * * * The veterinarian is the instrument of the conservation of animal values, and that makes him an economic factor of tremendous consequence. But most animals are food, and flesh is subject to subtle disease. Therefore, the veterinarian is also a conservator of human health. Thus, in a large way, the veterinarian is a vital part of the whole machinery of economic and social welfare."

These thoughts, coming from a man so closely allied with the agricultural interests of America, are well worthy of consideration.

Pasteurization

The pasteurization of milk, to render it safe for human consumption, is being practiced in many states throughout the United States, and is believed by some the only thing necessary

to make milk safe. There are many other infective organisms besides the tubercle bacillus that are conveyed by milk, and there is no doubt in my mind that pasteurization is a necessary operation to destroy pathogenic organisms in milk. However, the practice of pasteurizing milk does not solve the question of bovine tuberculosis.

Wherever pasteurization is practiced to the exclusion of the tuberculin test, there you will find a high percentage of tuberculosis among cattle. I recently visited a dairy section near a metropolitan city, and was told by a number of farmers that their herds were never tuberculin tested; the milk was pasteurized and shipped to the city, and that was all that was required. Tuberculosis exists in from 25 to 35 per cent in all the cattle in that county.

A wonderful change has taken place among dairymen with respect to ordinances requiring the tuberculin testing of their herds. Heretofore, the adoption of such an ordinance almost invariably meant an application for an injunction and a long legal battle to oust the ordinance. Within the past two or three years, more ordinances of that kind have been adopted than were in existence heretofore, and with very few exceptions the requirements have met with the cooperation of the live stock owners.

The most striking order of this character was recently issued by the Louisiana State Board of Health. It requires the tuberculin testing annually of all dairy cows from which milk is sold. This applies throughout the state. It may be too broad in its scope, but it reflects the attitude of the health authorities of that state. As a resident of Washington and a patron of the dairy industry, I heartily endorse the proposed milk ordinance for the District of Columbia, which requires that all cows furnishing milk to the District shall be tuberculin tested, and all milk (except milk from certified herds) shall also be pasteurized. This principle, I think, should apply generally throughout the country; to be put in operation when it is practicable to do so.

Conclusion

As a profession, we see it our duty to be of service to the live stock industry of the nation. Like all other professions, ours has several branches. There is the practicing veterinarian, the laboratory worker, the investigator, the educator, the editor, and the regulatory officer. Naturally, there are different views on

many subjects but it is a matter of history that in the long run every branch of a profession has united in helping to put into execution and carry to a successful termination the problems that have confronted it.

There are many phases of the tuberculosis-eradication work that can be improved. I want you to feel that the Bureau of Animal Industry is striving in every way possible to help relieve the live stock industry of its most menacing foe. It contemplates and has always considered the rank and file of the practicing veterinarians, and the important role they are to play in the campaign to suppress that disease. It seems that as the work advances that it is shaping its course so as to utilize to a very large degree the services of the accredited veterinarian.

The manner in which the services of many are being utilized in a great many localities today is a forecast of what the future holds forth for you. When the history is written of the eradication of tuberculosis in the United States, there is no doubt that it will contain high words of praise for the valuable services rendered by the private practitioners. No man has a right today, in view of the existing conditions, to try to array the private veterinarian against cooperative tuberculosis-eradication work. In closing I want to take the time to read the two concluding paragraphs taken from the July issue of the JOURNAL OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION, by Dr. H. J. Waters, Managing Editor of The Weekly Kansas City Star:

> "If all the savings caused by the practicing veterinarians were added together a staggering total would be reached. Of even more importance than this saving is the service of the veterinarian in conserving the health of the human family. It is not much to expect of medical science that the insidious disease, tuberculosis, may ultimately be stamped out of our country, but it can not be accomplished without the help of the veterinarian. Be it said to the credit of the veterinarians that they have been leaders in the movement to make the United States free of tuberculosis.
>
> "We do well, therefore, to honor the veterinary profession. We do well to support generously the colleges educating men for this important profession, that they may be more scientific and more practical in their practices and that they may be of the highest type of citizen. We are merely promoting our own welfare when we give generous encouragement and support to the patient workers in the colleges and the Department of Agriculture where the discoveries were made upon which this new science is based and where discoveries are being made that will determine the progress of this indispensable service to agriculture."

For every dollar invested in the Arizona campaign for prairie-dog eradication in 1922, there was a fifteen-dollar return in the value of farm products saved from destruction by these pests, according to reports to the United States Department of Agriculture.—*Dearborn Independent.*

THE TREATMENT OF MAL DE CADERAS WITH TRYPARSAMIDE[1]

By WILSON G. SMILLIE, M. D., *Sao Paulo, Brazil*

Senior Field Director, International Health Board

Mal de caderas is the biggest economic problem of the whole vast Paraguay Valley. The disease entered the valley from the north and spread slowly down the Paraguay River. Beginning more than fifty years ago, it extended the area of its ravages down through the great state of Matto Grosso, up to and beyond the Bolivian border, and on down the river to Paraguay and the Argentine. The disease became enzootic and has caused tremendous losses every year. In Matto Grosso alone, thousands of horses die annually from the disease, the animals being lost just at the season when they have become well trained and are most urgently needed in the catching of the wild cattle. Some of the larger ranches lose almost all their horses each year, sometimes 200 or more, and the smaller ranches, though sometimes escaping the plague for a year or two, eventually have their entire herds wiped out by the disease.

The disease is caused by a trypanosome, discovered and described by Elmassian[1] and named *Trypanosoma equinum*. Horses are especially susceptible to this parasite. In all my travels, I found no authentic case in which a horse that had once developed characteristic symptoms of paresis, subsequently recovered. Mules are less susceptible; the disease is more prolonged and cases of recovery are not uncommon. The common laboratory animals are easily infected with *Trypanosoma equinum* and usually the infection terminates fatally. Brazilian scientists believe that the disease is transmitted by one of the biting flies, *Lepidoselaga lepidota*, a tabanid, commonly called "matuca" by the natives. Migone[2], of Paraguay, noted extensive epizootics among a type of large rodent called the "capivara" along the water courses. He observed that the animals showed a very curious type of paresis and readily demonstrated *Tr. equinum* in the blood of the infected animal.

Many different drugs have been used in the treatment of the disease without marked beneficial results. Migone[3] has recently reported encouraging results with Bayer "205," the formula for

[1]From the Studies of the Instituto de Hygiene, Sao Pāulo, Brazil.

which has not been given. Ranchmen on the Upper Paraguay, however, have used this drug to some extent but find it quite toxic in effective doses (3 grams intravenously).*

The Rockefeller Institute for Medical Research has been engaged upon a chemotherapeutic investigation of the treatment of trypanosome and spirochete infections for several years, and among the drugs made and studied was one which possessed a marked therapeutic action in experimental trypanosomiasis. This drug, the sodium salt of N-phenylglycineamide-p-arsonic acid, was first made in 1916 by Jacobs and Heidelberger[4] and has since been named tryparsamide. The toxicologic and therapeutic studies were carried out by Brown and Pearce[5]. They treated various species of laboratory animals infected with a number of trypanosomes, as for example, the causal agent of sleeping sickness in human beings, of dourine, of nagana, of surra, and also of *mal de caderas*. The therapeutic effects obtained with tryparsamide in these experimental infections and the results of the toxicologic investigations were such that a trial of the drug in human trypanosomiasis (African sleeping sickness) was desirable. The first employment of the drug was made in 1920 by Pearce[6] of the Rockefeller Institute, in patients suffering from this disease in the western part of the Belgian Congo. The preliminary results obtained were encouraging and at the present time the drug is being used by a number of physicians in Africa. In addition, it has been sent to government officials in South Africa and India for therapeutic trials in nagana and surra of domestic animals.

In the course of the investigations of Brown and Pearce, it was noted that tryparsamide was an efficient therapeutic agent in the infections produced by the trypanosome of *mal de caderas*. In view of these results, the Instituto de Hygiene of Sao Paulo, Brazil, became interested in the subject and procured some tryparsamide from the Rockefeller Institute. Dr. Nova Gomez*, one of the volunteer staff members of the Instituto, repeated the therapeutic experiments of Brown and Pearce, inoculating rabbits with an Argentine strain of *Tr. equinum*, and after the animals were markedly affected, treating them with tryparsamide. The results obtained were wholly satisfactory in those instances in which the treatment was instituted before the animals became extremely ill and prostrated.

The Brazilian Land and Cattle Company, hearing of tryparsa-

*Personal communications.

mide, kindly invited me to use the drug at their vast cattle ranch at Descalvados, Matto Grosso, on the upper reaches of the Paraguay River, where *mal de caderas* is endemic in its severest form. Facilities for travel across western Brazil are meager and the voyage up the Paraguay River to the Descalvados Ranch is a slow and haphazard process. Thus it was possible to study the effect of single doses of tryparsamide administered to a few cases of the disease at widely different enforced stopping places in the course of the voyage. One of these was at the Miranda Estancia and another at the Port of Corumba.

Fig. 1. These horses show the advanced stages of mal de caderas, with drooping head, sleepy expression, swaying gait, marked anaemia and marked loss of weight. Trypanosomes are very scanty in the blood.

The diagnostic procedure employed to determine the presence of *Tr. equinum* was as follows: 5 cc of blood were withdrawn from the jugular vein into a centrifuge tube containing a small amount of 2% sodium citrate solution. The blood was centrifuged in a hand centrifuge at high speed for three minutes, when the blood serum became clear and the layer of white corpuscles was clearly defined. Three or four drops of serum were withdrawn with a capillary pipette from the level of the layer of white blood corpuscles, transferred to a slide, covered with a cover-glass and examined immediately for parasites. Two preparations were made from each tube of blood and each specimen was searched for one-half hour before it was discarded as negative. The temperature of the air during the day varied from 90° to 100° F. so that we were working with almost a "warm stage" preparation. The trypanosomes, when present, were easily seen because of their active motility and high refrac-

tility and they remained actively motile in the citrated blood for many hours.

Single doses only of 5.0 grams of tryparsamide were administered at the Miranda Estancia and at Corumba. The drug was dissolved in 20.0 cc of normal saline and administered intravenously.

Studies at Miranda Estancia

Miranda Estancia is at the junction of the Miranda and Paraguay Rivers, in Brazil. This ranch has long been invaded by *mal de caderas*, losing practically all its horses each year, and usually necessitating the annual purchase of 150 new horses. The disease had not commenced at the time of our visit—March, 1922. Eighteen of the horses of the home ranch were examined, as our time was limited. All seemed healthy and were actively at work. Thirteen of the eighteen horses examined were considered as negative. Their temperatures (taken per rectum) were normal, ranging from 99.5° to 101° F. and no parasites were found in the circulating blood. Horses Nos. 15 and 17 had temperatures of 102.4° and 102.1° respectively, but blood examination yielded negative results. 10 cc of citrated blood were withdrawn from the vein of each horse and injected intraperitoneally into two young dogs. Six weeks later these dogs were found to be negative.

Horse No. 1 seemed in good condition, but had a temperature of 103° F. and the blood was swarming with trypanosomes, there being ten or fifteen in every microscopic field. This horse was treated at 4 p. m. with 5.0 grams of tryparsamide, given intravenously in 20.0 cc normal salt solution. At 9 a. m. the following morning, 17 hours after treatment, the blood showed a very few trypanosomes. They were very much less active than those seen the previous day. Many masses of trypanosomes were agglomerated and moving feebly. Phagocytic cells were seen which contained considerable numbers of trypanosomes in all stages of disintegration.

Horse No. 9 had a temperature of 103.9° F. and showed a blood picture similar to that of Horse No. 1, except that fewer parasites were present. The horse was thin but active and at work. He was given 5.0 grams of tryparsamide intravenously at 4 p. m. The following morning at 9 a. m. only one active living trypanosome was found in the blood preparation.

Horse No. 13 was one of eleven survivors that had come through the epizootics of the previous year, in which over 100 horses had

been lost. The animal had never been sick and had a normal temperature—100.1° F. Nevertheless, on careful search, a few trypanosomes were found in its blood. This case led us to suspect that the horse itself may be the most important carrier of the disease; the surviving horses which do not develop symptoms and are consequently not shot, carry the parasite in their blood from season to season or from year to year. This horse was treated with 5.0 grams of tryparsamide administered intravenously at 4 p. m. The following morning no parasites were found in the blood.

A subsequent report from this ranch, four months later, stated the *mal de caderas* struck the ranch about two months after my visit, destroying a large number of horses. Horse No. 1 died of the disease, but horses Nos. 9 and 13 did not develop symptoms.

Experiments at Corumba

While waiting for the up-river launch at Corumba, a port on the Paraguay River, a considerable number of horses and mules were brought to us for examination. A certain proportion of those examined were found to be infected with *Tr. equinum* and may be divided into two groups—early and advanced cases.

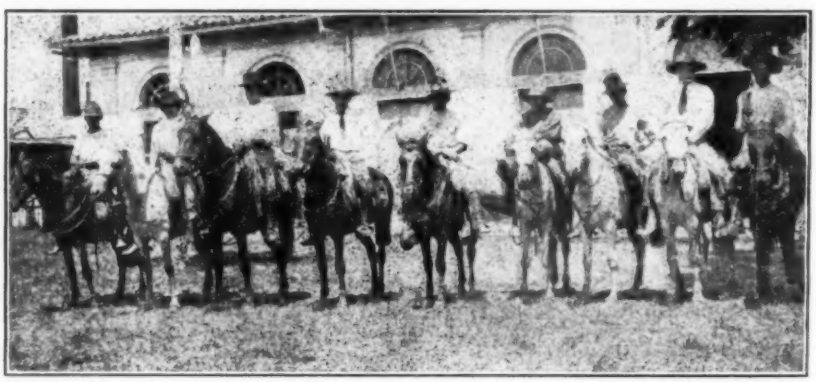


Fig. 2. By routine blood examination, three of these horses were found infected with mal de caderas. The horses were actively at work and the only symptom was an intermittant fever. These cases respond well to tryparsamide.

Group A. Early Cases. Eight horses and two mules were in the early stages of the disease. They were active and working daily, and the only symptomatic evidence of *mal de caderas* in six was a gradual loss of weight, despite a good appetite. All had an intermittent or continuous fever of one to three degrees F. but only two were beginning to show the characteristic symp-

toms of the disease, namely, weakness and a peculiar swaying of the hind quarters. All eight animals were treated with 5-gram doses of tryparsamide, given intravenously.

A report one month later showed that the two mules and four of the horses were active and well; one horse had developed marked symptoms and had been shot, and three horses which had shown some improvement were again on the decline.

Group B. Late Cases. Nineteen horses showed marked symptoms of the disease. They were very thin and weak; some were almost unable to stand, and others were unable to rise after they had fallen. Most of them had a high fever. We noted that the horses with high fever usually had the largest numbers of parasites in their blood. In the last stages of the disease the temperature falls to normal or subnormal and only a rare parasite is found in the circulating blood. These cases show marked paresis and at times almost complete paralysis of the hind quarters.

All nineteen horses were given 5.0 grams of tryparsamide dissolved in 20 cc of normal salt solution and injected into the jugular vein. Eighteen hours later those horses that had had the largest number of parasites were re-examined. In some instances not a single living parasite was found, though enormous numbers had been seen on the previous day. In three of the cases, living parasites were still found but in greatly diminished numbers. In some instances the blood picture was striking, in that the parasites were agglomerated in great masses of fifteen to thirty organisms forming a slowly revolving, wriggling mass. The phagocytic cells contained masses of parasites in various stages of disintegration.

One month later we received a report of these horses. Eight of the nineteen had died, some of the most advanced cases dying only a day or two after treatment. Eight horses had improved greatly, seemed well and were working hard under trying conditions. Three horses were in about the same condition as before.

These preliminary experiments at Miranda Estancia and at Corumba showed that the administration of a single dose of 5.0 grams of tryparsamide rapidly reduced the number of parasites in the circulating blood and in certain instances appeared to sterilize the blood, as far as could be determined by microscopic examination of centrifuged specimens. In addition there was marked clinical improvement in some animals especially in the early stages of the disease. However, it was clear that a single dose of 5.0 grams was not a sufficient treatment to destroy all

the trypanosomes in an infected animal and thus bring about a permanent arrest or a cure of the disease.

Experiments at Descalvados Ranch, Paraguay River, Bolivian Border

Conditions at the Descalvados Ranch were most favorable for our field studies. The disease had swept the ranch every year, usually beginning about the end of February. In March, 1922, when we arrived, it had not yet begun to destroy the horses though it was expected daily.

One hundred and thirty-five horses were examined; 18 at the home ranch, 100 at Boa Vista Camp, and 17 at José Alexandrino. None of the horses showed clear-cut symptoms of paresis by means of which the ranchmen could diagnose the disease. It was suspected in some, for they were getting thin despite good care, but none had yet shown the characteristic swaying of the hind quarters. Nevertheless microscopic examination proved that 47 of these horses were infected. Twenty-eight of the group had increased temperatures and a considerable number of parasites in the blood. These we believe were early and active cases of the disease. Some few had no fever, were in good condition and had only a very rare parasite in the blood. These I suspect were latent cases of the disease, for some of them had been through two or three outbreaks without developing symptoms.

Administration of Single Doses: Two horses that had fever and were becoming thin, and in whose blood trypanosomes were found, were first given 6.0 grams of tryparsamide intravenously in 20.0 cc normal saline. After 24 hours no parasites were found in the blood. The temperatures of the horses promptly dropped to normal and remained there. Both horses improved rapidly. Seven days later one parasite was found in the blood of Horse D1. It was clear, therefore, that a single dose of 6.0 grams had not sterilized the blood of this infected horse.

One group of 10 horses were given a single dose of 8.0 grams of tryparsamide intravenously. None showed the characteristic last-stage symptom of paresis, though almost all were becoming thin. Six horses had definite fever and showed considerable numbers of parasites in the circulating blood, while four had no fever and only a rare parasite could be found in the blood. All these horses began to improve at once. Their temperatures dropped abruptly to normal, and for 30 days they gained in weight and strength and seemed almost normal, with the excep-

tion of horse A3, which was found dead in the pasture. The owner believed that death was probably caused from snake-bite.

We received a report, about three months later, stating that horses A6 and A9 had relapsed and were beginning to stagger. A second treatment of 8.0 grams of tryparsamide was then administered to all the horses in this group, nine in number. An immediate improvement followed this treatment and at the last report, four months later, all the horses were well.

These first experiments with tryparsamide showed that single doses of 6.0 to 8.0 grams given intravenously to a 300-kilo horse did not permanently sterilize the blood of the infected animal. On the other hand, the administration of single doses of the drug produced prompt and beneficial effects, such as the cessation of fever and a well marked physical improvement which lasted for several weeks or months. Moreover, the re-treatment with a single dose of 8.0 grams was followed by a normal clinical condition for at least four months. The next step, therefore, in these preliminary therapeutic trials was the administration of repeated doses.

Administration of Repeated Doses: In order to determine the possible toxic effects of repeated large doses of tryparsamide, a small horse (250 kilos), infected with *mal de caaderas,* was given 8.0 grams of tryparsamide intravenously (0.032 grams per kilo). No parasites could be found in the blood 24 hours later. Three days after the first treatment 12.0 grams (0.048 grams per kilo) were given intravenously. The animal showed no toxic or other symptoms whatever, either immediately or later. In this connection mention should be made of the toxicologic experiments of Brown and Pearce[5]. They considered a single dose of 0.75 grams per kilo given intravenously as a lethal dose for the rabbit, since an occasional animal succumbs to this amount. Large, sublethal doses, however, may be repeated at frequent intervals. The approximate lethal dose for the monkey is placed at not less than 1.0-1.25 grams per kilo, administered intravenously, and they cite one instance in which four doses were given in three weeks (0.75, 1.0, 1.25, 1.5). The monkey showed slight signs of intoxication, lasting for a few days, with subsequent recovery. Pearce[6] reports the intravenous administration, with no untoward effects, of three weekly doses of 7.0 grams to a man weighing 62.5 kilos (0.336 grams per kilo). A comparison of these doses indicates that larger doses than 12.0 grams could probably be administered to 300-kilo horses without toxic manifestations.

When the results of this experiment were obtained, 29 infected horses were treated with repeated doses according to the following plan. Twelve horses were given two doses of 8.0 grams of tryparsamide intravenously with an interval of 20 days. Twelve other horses were given two doses of 8.0 grams with an interval of 20 days; the first given intramuscularly and the second intravenously. Five infected horses were held as controls, separated from the treated horses and kept in a distant pasture.

All the horses were about the same weight, approximately 250 to 300 kilos. All were in the early stages of the disease or were latent cases, and showed trypanosomes in the circulating blood in greater or lesser number. Some had considerable fever but the majority had none or a fever of an intermittent type. A few were thin, but none showed the characteristic paresis, and the ranch owner was astonished as one after another of the apparently normal horses was found to be infected.

Thirty-six hours following treatment, all horses were re-examined, and although in every case a careful microscopic search of centrifuged blood was made, no parasites were found. Those horses which had been treated intramuscularly all had marked swelling and tenderness about the area of injection. This edema increased and at the end of 3 days the horses seemed quite ill with considerable fever—103° to 104° F. and would not eat. The condition entirely disappeared by the end of a week and there was no abscess formation or sloughing. Pearce recommends intramuscular injection with tryparsamide in the treatment of sleeping sickness in human beings, but our experience showed that the intravenous method is preferable in the treatment of horses.

The treated horses were placed in an isolated pasture and left to the care of the ranch manager. Twenty days following the first treatment, the second treatment of 8.0 grams of tryparsamide was administered. None of the horses had developed symptoms, but the controls had all declined perceptibly.

A report received at the end of 3 months stated that *mal de caderas* had broken out in the portion of the ranch herd that had not been examined or treated and some of the horses had died. The five controls had all died. The 24 horses that had received two treatments of 8.0 grams of tryparsamide were working actively and had shown no symptoms of disease.

A second report, 6 months later, and 9 months after treatment, stated that *mal de caderas* had swept the surrounding ranches but that the 24 treated horses had remained well.

Discussion

In addition to our observations upon the value of tryparsamide in the treatment of *mal de caderas*, certain facts were noted which we believe may have an important bearing upon the epizootology and prophylaxis of the disease.

In the first place, the "matuca" which transmits the disease is prevalent during only a short period—November to February—at Descalvados. At the time of our voyage in March and April there were very few to be found along the Paraguay River. It is probable that the fly is not an important factor as a carrier of the parasite, from season to season, but rather acts as a transmitter of the disease during the hot season.

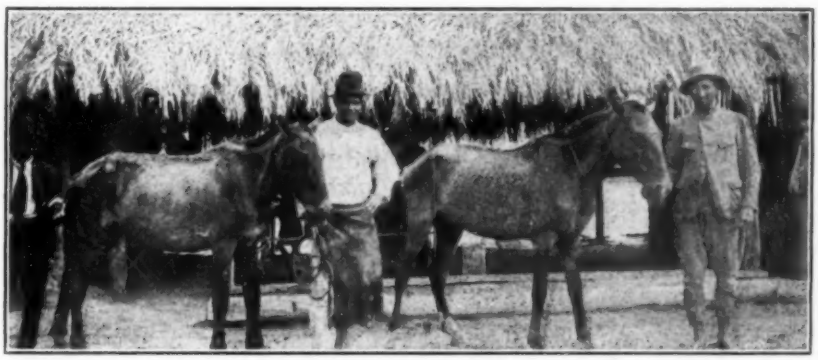


Fig. 3. Note the position of the legs of Horse No. 2. His forelegs are wide apart, acting as props; there is a partial paralysis of both hind legs. These cases are too far advanced to be cured by treatment with tryparsamide.

Migone[2] suggests that the "capivara," a large rodent which is highly susceptible to the parasite, may be an important reservoir of infection. But the "capivara" inhabits the margins of the large rivers, whereas the horses are usually placed several miles from the rivers in upland pastures.

Our observations suggest that the horse itself, and also the mule, which is less susceptible to the parasite, may be the chief latent sources of infection for the herd.

To the ranchman, a horse has not been considered as infected with *mal de caderas* until definite and charactristic symptoms of paresis develop; then the animal is shot at once, as it is recognized that a fatal termination is inevitable. Our experiments emphasize the fact that there are two phases of the disease. First, there is the phase of blood invasion. In this stage the horse appears normal and works actively. He may have fever and be

losing weight, but the owner can detect none of the characteristic symptoms of the disease. Nevertheless the blood may be swarming with trypanosomes. This is the stage in which there is hope of curing the animal and is also the stage which is of greatest danger to the herd, because of the danger of transmission by the fly.

The late stage of the disease, with the invasion of the central nervous system and its characteristic symptoms of paresis, is the one which is commonly recognized as *mal de caderas*. This phase is not of great importance, either from the point of view of treatment or prophylaxis. Even if the disease be checked, the horse or mule could probably not regain its normal condition. Moreover, these animals are not so great a menace to the herd as they were in the early stages of the disease, since the parasites have largely disappeared from the circulating blood.

It is obvious that if the disease is to be brought under control, it must be diagnosed in the early stages. We must recognize that if one waits until one horse in the herd develops paresis, it is more than probable that twenty horses are already in the early and highly infective stages of the disease.

Furthermore it is clear that the disease may be dormant in a herd of horses during several weeks or months when the horses are at pasture during the idle season. When the heavy work begins in the early fall, the severe exertion will bring about a rapid decline and in a short time the horse becomes paralyzed and is shot.

In view of these facts, together with the results obtained by treatment of the early stages of the disease with tryparsamide, two plans of prophylaxis were proposed for the ranches of the Paraguay Valley, which should prove of practical value in checking the extensive inroads made by *mal de caderas* each year.

Plan A

1. Make a microscopic blood examination of all horses between December 1 and January 1 each year. Isolate all positive cases in a clean, short-grass pasture. (The tabanid is most prevalent in thick scrub.)
2. Take the temperatures of all well horses every two weeks from January 1. All horses showing a temperature of 39°C (102°F.) per rectum should have another blood examination, and all positive cases isolated and treated. The fortnightly

taking of temperatures should continue with the well horses until April 1.

3. Immediately on making the diagnosis, treat all positive cases with 8.0 to 10.0 grams of tryparsamide administered intravenously, repeating in two to three weeks. Three treatments of 8.0 to 10.0 grams should probably be sufficient. Horses under treatment should be isolated in a good pasture and should do no work. All horses, both those that are negative and those that have been treated, may be put together and worked at the beginning of the season, about April 15.

This procedure could be most satisfactorily carried out by a competent veterinarian who would remain on the ranch from January 1 to April 15. It would not be necessary for him to remain at the ranch during other seasons of the year. After one or two years, if found desirable, a personnel of young men might be trained in all the details of the examinations. They could then carry on the work, under competent supervision, at a much reduced cost. The most difficult feature of this plan, however, is the microscopic examination of the blood, which demands the skill of a trained technician.

Plan B

In case it is not possible to make microscopic examinations, a less accurate but very practical method of prevention and eradication of the disease is as follows:

1. The rectal temperature of all horses should be taken by December 15. Any horse with a temperature of 39°C (102°F) or over should be considered as suspicious; immediate isolation should be instituted and daily temperatures taken for five or six days in succession. If the horse continues with a temperature of from 39° to 40°C, he should be considered as infected, and isolated and treated as in Plan A.
2. All horses with temperatures of less than 39°C may be considered negative, but should be examined every two weeks, as in Plan A, until about April 1.

This alternative method is not scientifically accurate, but is a rough and ready index of infection with *Tr. equinum*, since 99% of all fevers in the horses in Descalvados, between January 1 and April 1, are due to *mal de caderas*. This alternative method would probably not give the satisfactory or the permanent results that would undoubtedly follow the adoption of some such pro-

cedure as is suggested in Plan A, but it is suggested because it can be carried out without a specially trained personnel.

In addition to the above methods, directed specifically toward the treatment of infected animals, the following general measures should be carried out:

1. New horses should be brought from cadera-free upland zones. Horses brought from the lowlands may be carriers, and one infected horse introduced into the herd is a potential menace to the whole troop.
2. It is not necessary to carry out active and expensive destructive measures against infected rodents ("capivara").
3. It is highly advisable to keep well horses on high ground in clear, short-grass pastures during the rainy hot season, in order to keep them away from the transmitting biting fly, (the "matuca").
4. It is not necessary to waste kerosene and disinfectant in destroying the dead bodies of infected horses, as has been the custom on many ranches. The parasite dies with the horse and the soil does not become infected with the disease.

Since the disease is of a chronic type, it is necessary to continue observations with the drug, tryparsamide, over a period of months or years. This paper is intended simply as a preliminary report in order that interested persons may know of the results of our early experiments.

Summary

1. Single doses of tryparsamide of from 5.0 to 8.0 grams given intravenously to horses and mules suffering with *mal de caderas* are followed by a marked reduction of the parasites in the circulating blood. In a number of instances no trypanosomes could be found within 24 hours after treatment. In addition, there was a prompt cessation of fever and a pronounced physical improvement. In general the effect of such a dose lasted from one to three months.
2. The administration of two doses of 8.0 grams, separated by an interval of three weeks, was highly effective. The 24 horses so treated remained well and active for nine months while the five untreated controls had all died during the first three months.
3. No toxic symptoms or other evidence of constitutional injury were observed to follow the administration of tryparsamide.

On the contrary, pronounced general physical improvement was the rule.

4. The treatment of animals in late stages of the disease offers only a problematical measure of success, because of the marked involvement of the spinal cord, as evidenced by paralysis and also because of the poor physical condition of the animals.
5. It is suggested that the horse and mule may be the most important carriers of the disease and may serve as reservoirs of the infection from season to season.
6. Two plans of procedure for the treatment and possible eventual eradication of the disease in a herd are suggested.

BIBLIOGRAPHY

[1]Elmassian, Conférence faite au conseil national d'hygiene le 19 Mai, 1901. Asuncion, 1901. *Rev. Soc. med. argent., 1902, x, 122-148.*
[2]Migone, L. E., *Bull. Soc. path. exot., 1910, iii, 524.*
[3]Migone, L. E., and Osuna, T., *Arch. Schiffs. u. Tropenhyg., 1922, xxvi, No. 10, 289.*
[4]Jacobs, L. A., and Heidelberger, M. *J. Exper. Med.*, 1919, xxx, 411.
[5]Brown, W. H., and Pearce, L. *J. Exper. Med.*, 1919, xxx, 417-496.
[6]Pearce, L. *J. Exper. Med.*, 1921, xxxiv, Supplement No. 1.

NIGHT CAMP

A horse to ride and a dog to love,
And a fire to warm me by,
End of the trail and high above
The sweep of the starlit sky—
And where is there more for a man's desire
Than a horse and a dog and a pinewood fire?

The horse will bear me far and swift,
And the dog will guard my rest
When I lie me down on a dead leaf drift,
Close to the brown earth's breast.
But ah! the ache of an old desire,
And the face that glows in the pinewood fire.

C. T. Davis in the *Arkansas Gazette.*

Not in Sisson's Anatomy

Professor: "When you examine a dog's lungs under the microscope, what do you see?"

"The seat of his pants, I suppose."—*The Pelican*

SOME AILMENTS PECULIAR TO THE THOROUGHBRED AND HUNTER[1]

By H. C. CRAWFORD, *Jamaica, Long Island*

The vast proportion of ailments, to which the types in question are subject, constitute affections of the organs of locomotion and contiguous structures. The exigencies and demands of the thoroughbred, irrespective of his efforts being confined to flat racing, steeplechasing or hunting, incite claudications, some of which are associated with immaturity, faulty conformation or the two in conjunction.

Frequently horses showing the greater promise in their early, two-year-old form possess conformation which, although facilitating speed, predisposses to lameness and ultimately necessitates a let-up in training. From a clinical viewpoint, whether dealing with internal or external maladies, the predisposing causative factors take precedence.

From the breeder's standpoint, speed is bred to speed, with conformation and temperament frequently receiving secondary consideration. Early maturity and the display of extreme speed for a few furlongs are the requisites sought.

In view of the fact that the greater number of horses in training are two and three years old, it can be readily seen that immaturity ranks as the chief predisposing factor in the claudications of the thoroughbred. Fusion of the epiphyses, being incomplete until the horse is five years of age, furnishes a criterion of the developmental stage that other anatomical structures are undergoing, at a period when the greatest demands are being made upon the growing colt.

Length, lightness of forehand and obliquity of shoulder and pastern are to be sought in preference to uprightness of the latter, although the straight shoulder and upright pastern are more conducive to speed. Unfortunately such conformation detracts from the animal's aptitude to stand training, by inducing a maximum amount of concussion in the thoracic limbs. Lightness of the forehand is sought, as it enhances flexion and extension, while in the hunter the oblique shoulder and sloping pastern facilitate jumping.

The horse for flat racing should preferably be higher at the

[1]Presented at a Conference of Veterinarians, School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa., February 27-28, 1923.

withers than at the croup; the reverse, however, is to be desired for steeplechasers and hunters. The latter type should also be well muscled over the loins, have powerful hocks and gaskins and a conformation capable of affording the maximum amount of propulsion. Length of neck and pelvic limbs is essential for both types as well as contour of foot and texture of pododerm.

Although several other points in conformation are important, for the sake of brevity attention has been confined to those having a more direct bearing on the locomotion characteristic of the types.

The degree of speed attainable at any given pace is directly proportionate to the instability of equilibrium in a forward direction, and it is with this object in view that the jockey's seat most adaptable for flat racing is poised directly above the withers and anterior to the center of gravity.

In the hunter and steeplechaser, jumping qualities and endurance are the prime requisites and speed takes a secondary consideration. To assist in procuring these qualities, the jockey's seat simulates that of the cavalry mount and is positioned posterior to the center of gravity.

The weight impost borne by the thoracic limbs, which are subjected to both the strain of propulsion and concussion in a horse traveling at extreme speed, in addition to the other causes previously cited, constitutes a potent factor in producing certain lamenesses peculiar to the thoroughbred.

The exciting causes of claudication in horses used for racing and hunting are identical with those in commercial pursuits, *i. e.* concussion, tensile strain and traumatism, but present themselves in a superlative degree.

With regard to the relative frequency with which structures are most commonly affected, we would group them as follows: First, the periosteum; second, muscles; third, ligaments; fourth, synovials; fifth, tendon sheaths; sixth, tendons; lastly, nerves.

We will proceed with a brief resumé of the several lamenesses occurring with relatively the greatest frequency in the types under consideration.

"Buck Shins"—"Sore Shins"

Priority is given this periostitis of the principal metacarpal and metatarsal bones of horses two years of age in particular, as no colt of this age on the turf is immune. Occurring as a general sequence of training, it is customary to induce this condition in

all yearlings in the Fall prior to their two-year-old form, as its recurrence in the Spring is less severe, and early training is facilitated thereby.

The anterior face of the bones in question is the site of a periostitis, characterized by tumefaction and hypersensitiveness, extending practically the entire length of the bone, accompanied by an altered gait. The condition, as a rule, is more aggravated in the thoracic limbs, which in some instances present an affliction of the carpus and radius as well.

On Continental race-courses the claudication appears to have been associated to a certain extent with the influx of American riders, subsequent to the general adoption of the jockey seat first given publicity by Tod Sloan. In England and France the malady was far more prevalent than in Germany, but eventually its frequency became manifest in the latter country as well, through the same source.

The etiology is still somewhat in doubt. Some contend it is a periostitis primarily, while others hold to the view that it is associated with either an epiphysitis or a traction on the antibrachial fascia.

The ailment calls for the application of rather severe cutaneous irritants, alcoholic solutions of biniodide of mercury being an example. If the treatment is not persevered in, the condition will be characterized by a recurrence in one or more limbs, or a prolonged course with the appearance of osteophytes upon the anterior face of the bones in question.

Periostitis Around the Proximal Attachment of the Suspensory Ligament

This condition is confined more to the steeplechaser and hunter than the horse raced on the flat. It affects the pelvic limb especially; while in the trotter the thoracic limb is subjected to the ailment. Although the trotter was not included in the types to be dealt with, in this paper, in view of the frequent occurrence of this lesion in that horse, we mention the fact. It is incited by the extreme length of toe plus the use of toe-weights, whose object is the lengthening of the stride, accomplished at the expense of tensile strain upon the proximal attachment of the suspensory ligament.

The demands made upon this inelastic structure are great, both at the time of contact of the heels, when the limb is completely extended, and at the breaking over of the toe in its last

point of contact with the ground prior to flexion. In the hunter and steeplechaser schooling at the jumps incites tensile strain upon the ligament, and in the flat horse schooling at the barrier is a potent factor.

In the pelvic limb a tumefaction is noted at the proximal attachment, while in the thoracic limb this is absent. In either event, the carpus or tarsus, as the case may be, is imperfectly extended or flexed. In this instance palpation is of diagnostic value, as this is one area few laymen palpate prior to procuring a qualified opinion.

The lameness tends to recurrence more frequently in the trotter than the thoroughbred, because the length of toe and the wearing of toe-weights is erroneously considered essential to an acquired gaint, and constitute an ever-present, predisposing cause, subsequently producing sub-carpal osteodynia.

Parenchymatous Myositis

This caludication of myopathic origin is confined to the glutei, longissimus dorsi and extensors of the knee and elbow principally; is parenchymatous in type and essentially functional.

The condition accompanies excessive exertion and is nearly as prevalent as "bucked shins." It is associated with an unbalanced metabolism, in which the fatigue products are eliminated with insufficient rapidity, and is characterized by rather profuse perspiration, hypersensitiveness, inability of the affected muscles to functionate properly and the occasional presence of transient hemoglobinuria.

This type of myositis, therefore, responds to an eliminative form of treatment; diuretics generally sufficing, although in isolated instances laxatives are also required. Local applications are of secondary consideration.

The possibility of a too hasty "cooling-out" process is to be avoided, and a temporary lessening in the amount of work required of the horse is a requisite. The condition is frequently spoken of as "cording" or "cording-up."

Sprain of the Phalango-Sesamoidean Ligament

This lameness constitutes one of the more frequently occurring ligamentous derangements of the two-year-old thoroughbred and is practically non-existent in other types and aged horses. Being one of the most acute lamenesses to which the horse is heir, its nature is such that it completely incapacitates the horse for a protracted period. An animal will develop the condition

in a thoracic limb in the midst of a speed trial, necessitating his being brought to a walk and frequently the rider dismounting.

Comparatively little ability is necessary in diagnosing the condition as a foot lameness, but the inexperienced have frequently assumed that a navicular bursitis is the cause, and have performed plantar neurectomy. Subsequently, much to their surprise, the hyperthermia in the foot could not be accounted for. The lameness responds to a treatment consisting of complete rest and such antiphlogistic applications as hydrotherapy and poulticing. It is practically non-recurrent. On the course it is designated "spread foot."

Inflammation of the Antero- and Postero-Lateral Ligaments of the Coronet

This claudication is predisposed by upright pasterns, which induce unparallel hoof and phalangeal axes, associated with the fact that the weight impost borne by the horse incites fixation of both coronary and pedal articulations.

The acute form of this ligamentous affection is nearly as painful as the phalango-sesamoidean ailment, but there is a tendency to a slowly progressive type of inflammation, accompanied by calcification and the development of osteophytic deposits at the site of ligamentous insertion, with the ultimate formation of peri-articular ring-bone in given cases.

With the presence of exostosis the lameness frequently subsides, but if calcification of ligaments ensues, which is the frequent sequence, volar flexion and a mechanical impediment in locomotion become permanent.

Sesamoiditis

The sesamoidean apparatus constitutes the chief shock-absorbing mechanism in the thoracic limbs of the thoroughbred in active training. Together with the fact that the metacarpo-phalangeal articulation is normally in a condition of over-extension, the frequency of this claudication is second only to "bucked shins" and parenchymateous myositis.

Ligamentous Sesamoiditis

In view of the fact that the superior sesamoidean ligament, together with the perforans tendon, are subjected to tensile strain when the muscular portion of the phalangeal flexors fatigues, either during intensive training or when hard pressed in racing or hunting, the phenomenon of concussion presents

itself in a superlative degree. This results in ligamentous sesamoiditis as one of the most prevalent lamenesses.

Contrary to textbook teachings, hyperthermia and hypersensitiveness are usually absent. This results in a diagnosis being arrived at only after seeing the horse at a fast pace exhibit a slight degree of volar flexion, which is usually bilateral, as the tendency is for both ankles to be affected. If one ankle only is impaired, as a rule the other will be likewise, at a not far distant date. This type of the disease is amenable to treatment in many instances, though all too frequently it assumes a chronic course.

The sub-acute type may be associated with either a thecal, capsular or bursal synovitis, but ultimately the chronic nature of the malady becomes manifest as osseous sesamoiditis.

Osseous Sesamoiditis

This caludication partially incapacitates more thoroughbreds than any other lameness to which this horse is subject, and prevents him from extending himself to the utmost on a dry, fast track.

It is this condition, associated with arthritis deformans, a certain degree of joint contracture, and rarefying ostitis, which is accompanied by tendinous rupture, and characterized by a tearing loose of the branches of the suspensory ligament from the attachments to the sesamoid bones. This constitutes one of the most hopeless types of "break down." A certain degree of volar flexion may or may not be present at a slow pace, but is always evident during rapid locomotion.

Firing has been, and will continue to be the most popular form of treatment to employ, but the prognosis is that of the spavin group of lamenesses.

Synovitis

The synovials of the horse under consideration are subject to lesions, principally of the thoracic limbs, and are capsular, bursal and thecal in type. Tarsitis being comparatively infrequent, we will confine our attention to its parallel in the anterior limb.

Carpitis

Carpitis, or intercarpal osteo-arthritis, is predisposed by upright shoulders and pasterns, and is analogous to spavin, although the generic term "spavin" signifies a hock affection. When dealing with thoroughbreds one is impressed with the frequency of spavin of the knees.

Frequently subsequent to chronic sesamoiditis, the carpus assumes a compensatory role in shock absorption, which results in intercarpal osteo-arthritis. This ailment, which is equally rebellious to treatment as intertarsal osteo-arthritis, is characterized by a peculiar rotary and abductory type of locomotion.

In its incipiency, carpitis in the thoroughbred requires a display of diagnostic ability to recognize its presence, as it is unassociated with traumatism, which constitutes the paramount cause of this lameness in the draft types. Here again hyperthermia, hypersensitiveness and abrasions are absent, and the "cooling out" process affords little criterion; the animal must be seen extended, as in diagnosing sesamoiditis.

The lameness is due in many instances to osteophytic encroachment upon the inter-articular aspect of the bones, and palpable exostosis is frequently absent. The prognosis is usually about as unfavorable as other types of arthritis deformans.

Partial anchylosis, the general sequence of intercarpal or intertarsal osteo-arthritis, detracts from the thoroughbred's usefulness relatively more than from that of the horse in commercial pursuits.

Tendon and Tendon-Sheath Affections

Primary tendo-vaginitis is of frequent occurrence in the Spring subsequent to the influenzal and contagious pleuropneumonic infections.

Weather conditions permitting, attention is focused on the early Spring form of the new crop of two-year-olds, and training frequently begins before the tendon sheaths and tendons have regained normal tone, as scarcely a two-year-old passes through the Spring months without an attack of laryngitis, pharyngitis, or more serious infection of some portion of the respiratory tract. This leaves the structures in an atonic state, and a resulting primary tendo-vaginitis makes its appearance, with relative frequency in inverse ratio to the length of convalescence permitted prior to training.

The condition usually yields to simple treatment with rest and antiphlogistics, but frequently, in a few weeks of intensive training, secondary tendinitis supervenes.

Tendinitis

This affection unfortunately is not confined to an inflammation of the tendon, but more frequently than supposed presents itself

as a fibrillary rupture, characterized by serous infiltration into the sheath, so-called "bowed tendon."

Hunters and steeplechasers are subject to tendinitis induced by passive strain, while flat horses are usually the victims of a tendinitis incited by active strain. However, both types of strain may act in conjunction, as in a co-existing sprain of the flexors and the suspensory or check ligaments.

Fibrillary rupture in the proximal third of the metacarpal region is frequently associated with a lesion of the check ligament, or a bursitis of the flexor pedis; while that in the distal third is usually accompanied by a tendo-synovitis and possible lesions of one or more sesamoidean ligaments.

Lesions in the middle third present a more favorable prognosis, being due to tensile strain, unassociated with a conformation diathesis, and assisted during the reparative process by the supportive property of the paratendineum.

Although much dependence has been placed on line-firing as a standard treatment for "bowed tendons," a year's rest, plus the periodical application of a cutaneous irritant, preferably mercurial or iodin in content, will satisfactorily accomplish the liquefaction and subsequent resorption of inflammatory exudates, where results are of paramount importance and time is of secondary consideration.

In a sound horse, undergoing development as a hunter or jumper, the tendency, generally speaking, will be for lesions to appear in the proximal third of the metacarpal region; while in the flat horse the middle and distal third are the more likely locations.

We qualify our statement, because many steeplechasers and hunters have, on some prior occasion, during flat racing, developed sesamoiditis, ligamentous or osseous.

If an entire horse, with conformation suitable for jumping, should have his usefulness impaired on the flat, such an animal will in many cases train sound, even though subjected to twice the distance to which he was accustomed, after being castrated, thereby removing considerable impost supported by the thoracic limbs, together with the readjustment of weight in the changed seat of the steeplechase rider, plus a minimizing of concussion by diverting his efforts from the track to the turf.

The impetuous temperament of the stallion is quite a factor in aggravating lesions that otherwise might have been trivial and responded readily to treatment; his dogged nature often

undoes the efforts of months which frequently can be overcome as stated.

Partial or Complete Severing of the Superficial and Deep Flexor Tendons in the Pelvic Limb

This condition is confined usually to horses racing on the flat, the accident occurring when a field of horses is closely bunched, and for various reasons a rider takes a horse back suddenly. The horse in his rear, traveling at such momentum that he can not be immediately controlled, steps on the metatarsal region of the extended pelvic limb of the animal impeding his progress, resulting in partial or complete severing of one or both flexors of the phalanges.

Partial rupture yields admirably to treatment, but a completely severed deep flexor tendon in a hypersensitive individual, such as the thoroughbred, is generally unsatisfactory to treat, as the horse does not take kindly to the application of a brace. In addition to the poor regenerative power of tendon and the usual complication of pyogenic infection, the use of sutures does not facilitate healing.

Extreme Dorsal Flexion of Fetlocks in the Pelvic Limb

This malady is met with infrequently in the flat horse and trotter, being due to relaxation of the phalangeal flexors and superior sesamoidean ligament, occasioned by undue tensile strain. It is characterized by the fetlocks, in the region of the ergot, coming in contact with the ground during locomotion at extreme speed. These structures, which concur in supporting the angle of the metatarso-phalangeal articulation, become relaxed to the extent of permitting the degree of dorsal flexion stated.

The use of protective boots, after a let-up in training, together with special shoeing, adaptable for speed trials only, constitutes rational treatment. A recurrence, however, is to be anticipated with the resumption of intensive training.

Tendinous Contracture

Developing as the sequence of a multiplicity of lesions in the digital region, associated with volar flexion as the predominating feature, this condition is usually designated "contracted tendons."

We are inclined to view the greater number of cases as myogenic and not tendogenous, considering the myopathic disturbance

as being atrophic in character, and analogous to that occurring in contracture of the flexors of the carpus.

While it can not be denied that contracture specifically tendogenous is encountered, associated with either cicatricial contraction or adhesion, we venture the opinion that practically all cases are unassociated with any tendinous lesion, and that atrophy of the muscular portion of the flexors is responsible for the clinical appearance.

Contracture of the suspensory ligament is also not an infrequent cause of knuckling, simulating tendinous contracture, but the presence or absence of tenseness in this structure will reveal the possibility of its being an incriminating factor. Tendinous contracture, developing subsequent to a painful ostitis, bursitis or synovitis in the phalangeal region is essentially myopathic.

The mature horse subjected to fast paces does not tolerate tenotomy as does the colt with congenital contracture, or the horse in commercial pursuits; and median neurectomy which has restored to usefulness so many horses at a slow pace, is not borne well by an animal which must of necessity exert a supreme effort with an impost supported principally by the thoracic limbs.

The treatment of this affection under these conditions is unsuccessful, by reason of the limitations placed upon it.

Tendinitis and Bursitis of the Gluteus Medius

Inflammation of this tendon and its subtendinous bursa is associated principally with hunters and steeplechasers, being induced by falling with the pelvic limb in the phalangeal region momentarily caught in the obstruction over which the horse is jumping.

The frequency with which a horse may misjudge a jump in taking off prior to clearing it, is the usual cause of this condition, which is characterized by a peculiar adductory motion of the limb, making diagnosis a simple matter.

The tendency to chronicity bespeaks a guarded prognosis. Injections of turpentine preparations with iodin content usually restore the atrophied muscle to its normal rotundity; but upon the resumption of training the myopathic phenomena frequently recur, indicating that the lesion has not yielded to treatment. Horses so affected will not stand training.

There is, however, a certain percentage of recoveries attending this procedure, which is the most rational surgical intervention to pursue.

Bursitis Podotrochlearis

Navicular disease in the thoroughbred has a tendency to manifest itself as a circumscribed affection of the bursa in question. In the initial stage a shortening of the stride, associated with an occasional tendency to stumble, absence of contraction of the heels, and in isolated instances local hyperthermia characterize this claudication.

The narrow foot so frequently associated with well bred horses particularly predisposes to this lameness, and concussion at its maximum incites it.

The most efficient treatment for this condition is digital neurectomy. There has been an inclination for the profession to refrain from performing this operation, which is a specific indication in the circumscribed form of the disease.

The ailment is frequently sub-acute and associated with a certain degree of contracture of the heels when first presented for a diagnosis, and in such instances if the best results are desired, a restoration of the foot to its normal contour prior to operating is advisable.

The impression held by some, that contracture of the heels is usually indicative of navicular disease, and the view of others, that it is a clinical entity, are both erroneous; as a methodical examination of the anatomical foot will frequently reveal a specific cause for the contracture distinct from navicular bursitis.

Suprascapular Paralysis

Of the neuropathic disturbances to which the thoroughbred is predisposed, suprascapular paralysis is the lone representative, isolated cases being encountered in the steeplechaser and hunter.

This horse, in jumping, frequently clears the obstacle with one fore limb, while the other comes forcibly in contact with the obstruction; the impact being such that the limb is forced violently backward, producing this nerve lesion, with paralysis ensuing in short order. Collision between a horse minus his rider and another contestant, is a possible though far less frequent cause.

A characteristic abductory type of supporting-leg lameness develops, attended by atrophy of the supra- and infraspinati muscles, with a protracted course. The claudication is benefited by rest and massage, yielding to treatment, however, in comparatively few instances. The value of braces or harness for fixation purposes is problematical.

LONGITUDINAL FRACTURE OF THE OS SUFFRAGINIS

Fracture of the first phalanx presents itself in the form of a longitudinal fissure, this being practically the only type of fracture met with in thoroughbreds. This ailment appears to be of far more frequent occurrence on the European turf, where a number of horses are retired from training for varied periods of time, the diagnosis being "split pastern." Incomplete fractures of this type make good recoveries, eventually training sound.

It is quite possible that certain breeding sections of Europe predispose a horse to rachitic or osteomalacial deficiencies and incite this fragility of bone. We have had occasion to see individual cases which had been retired from training, the diagnosis having been made on the courses in England in particular, and the animal shipped home to this country. In practically every instance sesamoiditis appeared to be the claudication that impaired the animal's racing qualities.

The horses manifested bilateral lameness, both fore limbs being equally impaired; this, however, does not preclude the possibility of both conditions having been present at the time of the first inspection. The application of a plaster-of-Paris cast is necessary, recovery in eight weeks being the rule.

GENERAL STATEMENTS

This constitutes a brief resumé of the lamenesses peculiar to the types under consideration. Several general statements are to follow, including a brief consideration of a few internal and external maladies of daily occurrence.

Generally speaking, the claudications of the thoroughbred and hunter are characterized in the thoracic limb by a hyperplastic type of inflammation and are essentially chronic; while those in the pelvic limb are sero-fibrinous in type and essentially acute.

The several hydrarthroses and hygromata are usually associated with horses of more lethargic temperament and those denied the comforts of a box-stall, and occur with relative infrequency in horses used at a fast pace.

Transient lamenesses, traumatic in nature, due to the animal striking himself, are less frequent in speed horses with a natural gait. Acquired gaits, such as the trot, where several theories relative to shoeing and balancing, together with the necessity for wearing different types of protective boots are co-related, furnish the greater number of cases.

The thoroughbred is also at a disadvantage, as compared to

the trotter, respecting one feature of lameness, as the latter frequently alleviates his own claudication by transposing his gait from the trot to the pace and continues to perform with approximately the same efficiency.

The field for neurectomies is confined to the flat horse principally, as the hunter and steeplechaser require tactile sense in an unimpaired degree; therefore it is not feasible to perform the operation in the two latter types.

Median neurectomy, though ideal in alleviating the lameness associated with sesamoidean lesions and tendinous contracture in horses at a slow pace, is contra-indicated in a thoroughbred, as a horse with an unnerved ligamentous or tendinous affection will train but a limited time prior to hopelessly breaking down.

Digital neurectomy, already alluded to, has a given field of usefulness, but the vascular disturbances attending the "high" operation, when associated with traumatism at a point distal to the operative field, make it rather hazardous to use as a routine procedure, though many horses stand training for indefinite periods subsequent to its performance.

Firing will always be a standard procedure in the treatment of many sub-acute and chronic lamenesses. Although having surgical limitations, much is anticipated from its employment.

The value of rest, previously referred to as an adjunct in treating lameness, is amply demonstrated, as with the cases at hand. A year or more of inactivity is frequently permitted and the favorable result attending this is evident upon the resumption of training.

Horses undergoing the "rest" treatment for protracted periods should have the feet inspected by a competent shoer at regular intervals; the excess growth of horn removed and the foot balanced as though preparatory to plating.

Inappetence

Incited by the general hypersensitiveness characteristic of thoroughbreds, this condition is associated with many cases of so-called "bad doers."

Many horses refrain from eating the full allotment of rations because of this nervous disorder, manifested by stall-walking and a tendency to unrest.

The corrective measures consist in obstructing the animal's view of other horses undergoing training, preparing a variety of tempting foods, the administration of laxatives, antacids, and at

times mild sedatives, preferably the bromides. The malady disappears spontaneously with the discontinuance of training.

Dental Anomalies

Irregularities in dentition are associated with all horses two and three years of age. These are encountered in the development of enamel points, the shedding of temporary molars and incisors, eruption of supernumerary teeth and their necessary removal, together with stomatitis the logical sequence.

Eliminating the exciting cause, in addition to antiseptic, mild astringent, and at times caustic applications to given foci, constitutes rational treatment.

The occurrence of these conditions occasionally causes the animal to bear out during speed trials, but this tendency on the part of a horse—too frequently attributed to irregularities of dentition—is due in reality in many instances to the presence of incipient periostitis, which ultimately is associated with the appearance of a given lesion.

Dermatitis of the Pastern Region

Of the less serious yet troublesome ailments to which horses in training are subject, this dermatitis, generally referred to as "cracked heels," is of a common occurrence.

Flexion surfaces of articulations are more sensitive than other regions of the limb, and this together with the daily use of leg and body washes, which gravitate to this point, associated with the hypernitrogenous state of the system, incite acute attacks constituting one of the most rebellious forms of dermatitis one has to treat.

As it usually manifests itself as an acute exacerbation of a chronic affection, the several remedial measures afford temporary relief and consist in the use of antiseptic, antiphlogistic and mild caustic applications.

When the lesion reverts to a phlegmonous malady, due to chronicity, biniodide of mercury will promote cicatrization.

Acne

The second dermatitis makes its appearance as a "summer rash," associated with a diet rich in concentrates during the intensive training period; being widespread in Summer and abating as Fall approaches.

Although confining itself to no one portion of the body, certain attacks are characterized by a vesicular eruption in the girth

region where abrasions and chafes occur. The contents of the vesicles are transferred through the medium of rub-cloths and girths to other horses. More frequently, however, the nodular type of the disease is present.

The local application of astringent and antiseptic remedies, plus the administration of antacids, gives satisfactory results although certain cases run protracted courses. The derangement is to be distinguished from contagious pustular dermatitis when the vesicular outbreaks occur.

We have endeavored to cover the subject assigned with brevity, and trust that the practitioner may benefit thereby.

GREASEWOOD SOMETIMES POISONOUS TO SHEEP

Greasewood, a shrubby plant very plentiful on the range in some parts of the West, has been the cause of occasional large losses of sheep. This plant was listed as poisonous twenty-five years ago, but only recently have investigations been made by the United States Department of Agriculture which brought out definite information concerning the symptoms and the conditions under which poisoning will occur. The results of this work are contained in Department Circular 279, entitled "Greasewood as a Poisonous Plant."

The investigations have established that under most conditions this plant is a good forage for sheep, and dangerous when it is taken in considerable quantities, at least 1.5 pounds to the hundredweight of animal, in a very short time. Losses may be prevented by taking care that sheep do not graze too long on greasewood when they are very hungry. Animals that once show the symptoms usually die; in other words, a quantity of the plant which will cause the symptoms will cause death.

The greasewood plant, which is sometimes known as "chico," is light-green colored, scraggly, with spiny branches and slender, fleshy leaves about 1½ inches long. It is commonly recognized by western stockmen, but there are several other plants sometimes called greasewood.

Copies of the circular may be obtained without cost, as long as the supply lasts, by writing to the Department of Agriculture, Washington, D. C.

THE LIVE STOCK INDUSTRY OF ILLINOIS[1]

By W. S. Corsa, *Gregory Farm, White Hall, Ill.*

Among the many notable conferences held at this Home of Conferences, two of special signfficance were held on January 27th past, when the Live Stock Conference and the Dairy Conference were held here at the University. Both conferences were called at the instance of the Illinois Agricultural Policy Committee, in its effort to map out an agricultural plan which will help to meet the developing situation for Illinois for a limited period, say for the next twenty-five years.

The members of your Association, in such intimate touch with agricultural conditions, have no doubt also sensed the changes that have occurred and those impending in the economic conditions of Illinois. I might mention the increase in urban population, until now the majority of our citizenship dwells in the cities, the increase in tenantry, the threatened annual depletion of soil fertility, because of grain farming, the increase in manufacturing due to our favorable central location for markets and proximity to cheap fuel. and the further impetus to manufacturing through the almost certainty that transportation will be cheapened by improved waterways.

The Problem

The query naturally arises, what will the farmer do, not only to maintain his position agriculturally, but to take his part in the wonderful development of our commonwealth that lies ahead. It must also have raised similar question in the minds of members of the Illinois State Veterinary Medical Association. To my mind it opens up a wider life, more responsibilities, and larger opportunities for all of us—farmers and veterinarians alike. For the problems can not be met by either one without the other. And in their successful solution will come our mutual reward—sustaining and protecting the lives of the increasing citizenship is our job. This will be accomplished largely through an agricultural policy which recognizes the beneficent influence of live stock in maintaining soil fertility, profitable agriculture, and as providing a desirable dietary. To this end the services of the veterinary profession are indispensable.

At the conferences to which I have alluded papers were read

[1]Delivered at the fourth annual Veterinary Conference, University of Illinois, July 10-11-12, 1923.

by men who have had peculiar and special opportunities for investigational work with live stock and so I believe I am rendering this Association a far greater service by even briefly and inadequately drawing for your information upon the findings of these authorities, than by giving you my own extremely limited viewpoint relative to the live stock situation in Illinois.

Professor Case made clear that "at numerous places and on numerous occasions someone has pointed out that with the growth of population and greater demands for food, meat production must be replaced in large measure, if not almost wholly, by dairy, grain, vegetable and fruit production." It has been shown that "(1) one-third of the total land area is suited only to grazing purposes, (2) that live stock received probably eighty percent of the total food and feed produced on both improved and unimproved land and unimproved pasture, and (3) that a considerably increased production is possible without changing our diet. There is little reason, therefore, to expect any great reduction in meat production, even with a considerable increase in population. That we might expect no decided decline in total live stock production, because of population increases, finds solid support in the fact that Germany, with 133 people per square mile in 1914, had three times as much live stock per square mile as the United States with only 35 people per square mile."

More Live Stock Per Acre

It would seem "that as population increases, live stock will not increase in like proportion, but that live stock may be expected to increase with reference to total land area."

Most of the papers at these conferences fairly bristled with statistics. It will require more space and time than this paper affords to bring them all into harmonious array. "The census figures for 1920," Professor Rusk informs us, "show that while Illinois ranked eighth in total number of beef cattle, she ranked thirteenth in number of beef cows and heifers. In spite of these facts Illinois still has a significant industry in her beef cattle breeding operations and there has been some increase in interest during the last few years."

"Illinois, special problem in feeder cattle production is upon her vast tracts especially suited to production of grain. Under such conditions the results to date, in a sweet clover and stover silage system of maintaining a breeding herd, would indicate that under favorable conditions one breeding cow can be carried

practically the year around to every four acres in the rotation, without taking a single acre out of the cropping system or using a single bushel of harvested grain." "These results, Professor Rusk believes, "are indicative of great possibilities for Illinois in the maintenance of breeding herds on the by-products of her best system of farming and thus in a large measure solving her feeder cattle problem."

In treating of the horse situation in Illinois, Professor J. L. Edmonds opened a battery of statistics drawn from the arsenal of the U. S. census. The disclosures showed a shortage of 67,000 horses and a surplus of 1,217,000 mules on farms in the United States in 1920, as compared with 1910. In cities a shortage of 1,477,178 horses and a surplus 107,879 mules for the same period. On farms in Illinois a shortage of 156,035 horses, and 20,441 surplus in mules. In cities of Illinois a shortage of 115,463 horses and a surplus of 7,380 mules.

Stallion Registration

In 1910 there were licensed in Illinois 9370 stallions and jacks, while in 1920 only 4365 were licensed. "Live stock survey figures collected and compiled by the Illinois Agricultural Association on the colt crop of Illinois, in the quarter from April 1 to July 1, 1920, show some startling results. On 32,515 farms in 43 counties the number of horses and mules reported on July 1 was 238,546, of which 45,412 were designated as brood mares. In the three months named, a period in which nearly all the colts for the year are foaled, these mares dropped 8,918 colts. This seems to mean that only one brood mare in five foaled a colt that year. Allowing nothing for losses, which probably outnumber the colts foaled outside the quarter, the figures also indicate that at this rate of breeding it would require 27 years for the farms of Illinois to reproduce their present horse and mule power."

While "the statistics seem to show that the number of horses and mules on farms in the United States more than held their own from 1910 to 1920, in Illinois the 20,000 gain in number of mules did not, however, equal the 156,000 decrease in number of horses." "Cheap horses, cheap feed, high freight rates, and high industrial wages are reckoned as favorable to the use of horses." "Good rotations (of crops) and live stock farming make the use of horses more advantageous."

"The U. S. Department of Agriculture investigations indicate

that each tractor has displaced approximately two horses. Illinois Bulletin No. 231 concludes that on the average corn-belt farm, growing less than 240 crop acres, the horse cost can not be reduced enough to offset the cost of operating a tractor."

"In 1919 and 1920 the studies of records of 74 Indiana farms, by the Purdue Department of Farm Management, showed considerable more profit on the non-tractor farms. In 1921, studies of 100 farms in Woodford County, Illinois, by the Farm Management Department of the University of Illinois, showed a considerably smaller loss in net income on non-tractor farms, as compared with tractor farms."

"The advantage of a useful type of work horse over a nondescript is not at all fully or very generally appreciated. It is estimated by those in charge of the Central Remount Purchasing and Breeding Zone of the U. S. Army that of the horse population in this district, forty percent are nondescripts of no special value." What we need to produce are horses which have jobs.

McLean County System

The outstanding development in swine production in Illinois in recent years revolves around the scheme of sanitation as developed by your fellow veterinarian, Dr. Raffensperger, in McLean County. This method which so accords with common sense treatment and fits in so well with desirable crop rotations, and justifies itself by results, will no doubt renew and increase pig raising in Illinois—especially in the central and northern part of the state. Illinois still drags about half-way behind Iowa with her approximately 10,000,000 hogs. Perhaps the reason lies in the fact that Illinois stands first in shipment of corn—a position of which she need not feel altogether proud.

In these times of farm surveys the general impression has been confirmed by investigation that diversified live stock production goes hand in hand with desirable crop rotation. However, apart, but in addition, it would seem that the sheep industry should be materially increased in Illinois. Mr. Kammlade informs us that this state in the year "1867 had an estimated sleep population of 2,764,000—a number far in excess of the number at any subsequent time. On January 1, 1920, Illinois, with 637,685 head, ranked 19th among the states. Less than one farm out of every thirteen in 1920 reported sheep.

"Iowa has but one and one-half million acres more than Illinois. Her sheep population was 400,000 greater, even though the

number of swine and beef cattle exceeds the number in this State by several million head. In 1920 more than 260,000 feeder sheep were sent to feed-lots and farms in Illinois. That same year there were in Illinois 423,000 ewes one year old or over—in other words, ewes of breeding age. The total number of pure-bred sheep of all breeds, both rams and ewes, was over 13,000. If all the pre-breds were rams of breeding age there would be one pure-bred ram to thirty-two ewes."

"Farmers who keep sheep often fail to realize that wool yields approximately one-third of the total income from a flock." And veterinarians fail, I fear, to realize that the encouragement of the farm flock means a cash crop of wool from which to pay for vaccinating the spring pigs. For years the veterinary profession apparently concentrated its attention upon the horse, and well indeed did that noble animal deserve all the attention he received from the veterinarian and more than he received from the farmer. But the time has long since been here when the so-called humbler animals of the farm, the hogs, the sheep, and the chickens, demanded the best thought and care of the profession and the layman if we would serve our own best interest.

Interest In Poultry

This spring I had the good fortune to be a visitor for a day at the meeting of the Missouri Valley Veterinary Association, at St. Joseph, Mo. Of the several clinics, the one devoted to chickens unquestionably aroused the most active and sustained interest of the membership of that Association that day.

At this point I may say that along last month, when the wife of the speaker took only a week's vacation from home and left me as guardian and caretaker of her feathered pets, I acquired hourly information and experience, that of itself almost made me long for her return. However well informed you gentlemen may be relative to the "Poultry Flock as a Productive Enterprise on Illinois Farms," it is ventured that you will be enlightened by Prof. Card's treatment of this subject.

In number of chickens on farms, Illinois has consistently held second place among the 48 states as indicated by the Federal censuses of 1900, 1910, and 1920. From over sixteen and one-half million chickens in 1900, the number had increased to twenty-five millions in 1920, an increase of 51%." In "Illinois the apparent production for 1921 was 30,000,000 chickens and 116,000,000 dozen eggs."

In 1920 the state average was 106 chickens per farm. Prof. Card believes "there is a place for a flock of 200 to 300 hens on many Illinois farms." To do this would, of course, put poultry as a distinct farm enterprise of considerable magnitude.

In my day at St. Joseph I gathered the very distinct impression that many of the practitioners present were specializing not only in the treatment but in the care of poultry. And in this day of the decline, but not the fall, of the horse as a source of farm and professional revenue, may we not all of us consider seriously opportunities which possibly heretofore we have overlooked.

The Dairy Industry of Illinois is rightly recognized as one of the state's major activities.

"On the basis of the 1920 census figures and the reports of the Bureau of Agricultural Economics, Illinois ranks fourth in the total number of dairy cattle, sixth in the value of dairy products sold, eighth in the amount of factory butter made, fourth in the amount of condensed and evaporated milk manufactured." So that, according to Mr. H. A. Ross, "Illinois comes well within the half-dozen states leading in dairying." And this in spite of the fact that "on the basis of the last census the average production of cows in Illinois is only 3,044 pounds." On this showing our gain in number of cows from 1910 to 1920 was ample, though it was less than one percent in the ten years, or in stated numbers 9,777, while Wisconsin gained 372,000 cows in the same time." Illinois plainly needs better cows and more of them.

Tuberculosis Greatest Menace

Dean Russell, in his scholarly paper on "What Animal Disease Control Means to the Future of Dairying," flatly stated that "Tuberculosis is the greatest disease menace that we have to the dairy industry." Following the introduction of the tuberculin test, in 1892, "the next step in the development of control measures was to give a clean bill of health to those herds which freed themselves, by testing, from any suspicion of the disease."

A well merited tribute is paid to Dr. Dyson, of your Association, for his part in originating the idea of the Accredited Herd, which idea was promptly put to work in other states and later organized on a national basis by the U. S. Department of Agriculture. And from this flying start what has Illinois been doing?

Permit me to quote from Dean Russell further. "In the various states there were in December, 1922, 22,312 herds embracing

479,000 head that had been fully accredited. Wisconsin and Minnesota lead in this work with 47,000 and 45,000 respectively, while Iowa and Indiana follow with about 35,000 each. Illinois had 9,014 on this date.

Entirely apart from the risk to the human family, a subject of the first importance, come the costs of tuberculosis, one of which has assumed alarming proportions, for, as the Dean informs us, "of the 37 million swine killed in 1921, 12.5 percent were found affected." It was surprising to learn "that while tuberculosis is no respecter of persons, bovine tuberculosis is a respecter of political boundaries. The intangible line which separates Northern Illinois from Southern Wisconsin is a dead-line that in some way checks the onward march of this disease. For the United States official records, together with the records from the Wisconsin State Department show that the northern tier of Illinois counties contain nearly four times the tuberculosis as the contiguous Wisconsin counties.

A Constructive Policy

Undoubtedly disease control has never been more staringly important in Illinois than it is today. At our Conference in January, Dr. Graham recognized this condition in his valuable paper, "A Constructive Policy for the Control of Animal Diseases." He opens with the very fair statement, "In preparing a few remarks appropriate to this Conference I have been guided by the thought that the control of animal disease is a peculiarly cooperative, complex function."

"It should be made clear," he continues, "that the ultimate suppression of animal diseases, the loss from which approximates upwards of twenty million dollars annually in Illinois, is in no way assured by the mechanical ability to administer hog cholera serum, the feeding of a worm capsule, or the dispensing of a remedy."

"During the last three years over 10,000 specimens have been received for laboratory examination. A tabulation shows that swine diseases comprise 48.78 percent of the laboratory diagnostic material, feed and miscellaneous materials 28.75 percent, cattle diseases 12.51 percent and poultry diseases 11.44 percent.

"The source of the specimens for diagnostic work has afforded an interesting study from the standpoint of disease control and gives some idea of the activity in this field. Forty-nine percent of the diagnostic material received last year was from veterin-

arians; from miscellaneous sources, including physicians, manufacturers, and experimental sources, 40 percent; farmers submitted 7 percent while the farm bureraus are responsible for 4 percent of the total.

"The animal loss from preventable disease may be reduced by steady and unflinching labor through cooperation of the owner, the veterinary practitioner, and the investigational laboratory, in applying our present knowledge and accumulating new truths."

Again, the continual pressure being exerted upon domestic animals to yield the most energy in flesh and milk is closely associated with the morbidity in some herds and flocks. The problem of food requirements becomes more and more apparent in connection with certain losses and we are encountering conditions referred to as dietary deficiency diseases. The field of infectious diseases then becomes but a part of our problem. Further attention must be given to the parasitic and protozoan diseases which are so prevalent in our herds and flocks, together with their relation one to another, and the possibility of their influence on the different specific infectious diseases.

"What constitutes or defines susceptibility to disease, what are the forces upon which it depends? These obscure factors, if known, might greatly modify our present practices."

New Methods Being Developed

"In disease control work new methods are being developed and in this field we find that veterinarians and farmers, like physicians, must be refreshed by scientific meetings or by graduate training."

"The responsibility of the veterinarian is to teach the basic principles of preventive medicine in his community, the value of rotation of pastures and disinfection of premises in disease prevention."

The first step in "A constructive policy in the control of animal diseases would involve the proper teaching of the farmer, the veterinarian and the public, of the relation between human and animal diseases and what can be accomplished by proper preventive measures."

Nineteen thousand insects are required to make one pound of cochineal dye. Only the bodies of the females are used. They are wingless and each one produces over 1,000 young which spread over the plants rapidly.—*Dearborn Independent.*

THE ORGANIZATION AND WORK OF THE FEDERAL BUREAU OF ANIMAL INDUSTRY[1]

By W. N. NEIL, *Chicago, Ill.*

Meat Inspector, Bureau of Animal Industry.

The organization and work of the Federal Bureau of Animal Industry as a whole was presented by Dr. U. G. Houck to the Illinois Veterinary Medical Association at the time of their last regular meeting in Chicago, and do doubt many who are now present heard Dr. Houck's paper on this subject. For the reason stated and because of the limited time allotted for this paper, it is considered best to confine myself largely to the organization of the Bureau and its work at the Chicago station. However, I will in a brief way give the general organization of the Bureau.

In 1891, because of increased duties, it was necessary to create subdivisions within the Bureau. The first reorganization was as follows:

The Inspection Division.

The Division of Pathology.

The Division of Field Inspections and Miscellaneous Work.

The Quarantine Division.

The names of the divisions indicate, in a general way, the duties assigned to each.

The Bureau has grown from the original force of 20, specified by the organic act, to a personnel numbering, at present, more than 4,000 and from the original office and experiment station, it has expanded until now the Bureau is composed of an experiment station, eleven major divisions, and six offices, as follows:

Name of Division	*When Established*	*Work Commenced*
Pathological Division	April 1, 1891	May 29, 1884
Dairy Division	July 1, 1895	July 1, 1895
Biochemic Division	July 1, 1896	Jan. 1, 1890
Zoological Division	July 1, 1906	Aug. 1, 1886
Animal Husbandry Division	Jan. 1, 1910	July 1, 1901
Field Inspection Division	Sept. 1, 1912	May 29, 1884
Meat Inspection Division	July 1, 1912	Aug. 30, 1890
Tick Eradication Division	May 1, 1917	May 29, 1884

[1]Delivered at the fourth annual Veterinary Conference, University of Illinois, July 10-11-12 1923.

Tuberculosis Eradication Division	May 1, 1917	Jan. 1, 1907
Hog Cholera Division	Apr. 15, 1919	July 1, 1913
Virus Serum Control	July 1, 1920	Feb. 17, 1917
Quarantine Division	Apr. 1, 1891	May 29, 1884

The work has expanded until it covers 165 distinct projects.

Recently the Miscellaneous Division was merged with the Office of Personnel, and the Quarantine Division was merged with the Field Inspection Division.

In addition to the Divisions enumerated, the Bureau has Office of Accounts, Office of Personnel, Office of Chief Clerk, Office of Solicitor and the Editorial Office.

Activities of the Bureau

The activities of the Bureau have been directed along educational, research and regulatory lines and cover a wide range. You no doubt are familiar with what has been accomplished in the eradication of contagious pleuro-pneumonia, foot and mouth disease, dourine, sheep and cattle scabies, the discovery of the cause of Texas fever, and of hog cholera, and the means provided to combat these diseases, as well as the accomplishments of the Bureau's experiment station and laboratories in the investigation of tuberculosis, diseases of fowls, contagious abortion, dairy matters and the perfection of apparatus and methods.

One of the outstanding achievements has been the success in keeping foreign plagues out of our country. The Bureau of Animal Industry probably deserves more credit for preventing the introduction of destructive diseases into the United States than it does for its success in eradicating those with which it has had to contend. Since the Bureau was established, in 1884, none of the dreaded foreign plagues has gained access into the United States in the bodies of imported animals and none of these plagues has definitely established itself in this country.

As a further subdivision in the Bureau's organization, there are numerous offices or stations located throughout the United States. The work of the various stations is directed by an employee designated as Inspector-in-Charge. The inspector-in-charge of a station has direct supervision of all division projects which may come within the scope of his jurisdiction, which means that at the larger stations the inspector-in-charge may have more or less duties to perform under the direction of the chief of several of the major sub-divisions of the Bureau.

Two Offices In Chicago

In Chicago there are maintained two offices or stations, with inspectors-in-charge at each office. The tuberculosis eradication office or station is directed by Dr. J. J. Lintner, and he has charge of tuberculosis eradication work in the State of Illinois, reporting directly to the Washington office. I mention this in order to avoid confusion of the two offices. My own official designation is inspector-in-charge and I have supervision of the other work of the Bureau, in the Chicago area, which includes work under several of the Bureau projects to a greater or lesser degree.

Three laboratories are maintained by this Bureau at the Chicago station. A chemical laboratory is under the direction of Mr. C. T. N. Marsh, who reports directly to the Washington office and who works independently of any other office of the Bureau in Chicago. The functions of this laboratory are to examine samples of products prepared by establishments operating under federal meat inspection, as well as materials used by establishments in preparation of meat food products, in order to insure that no substances prohibited by the Bureau regulations are used. This laboratory also makes analyses of water samples, to insure that all water supplies are potable. The Chicago laboratory serves a district comprising several surrounding states.

Pathological Laboratory

A pathological laboratory is maintained, with Dr. L. E. Day in charge. This laboratory also serves a territory comprising several surrounding states. Specimens of a pathological character are forwarded by various stations for examination and diagnosis. Certain investigations and work of a research nature in connection with abnormal conditions found on post-mortem inspection are carried on. Dr. Day is also authorized, by the Washington office, to perform travel over a large portion of the United States to investigate reported outbreaks of infectious diseases among live stock, and at times has been detailed by the Washington office to make investigations of infectious diseases of live stock in countries beyond the limits of this country.

A branch zoological laboratory is maintained in Chicago, which is nominally under the inspector-in-charge of the station. Dr. H. B. Raffensperger is director of the work conducted by this laboratory. The activities carried on by the zoological

laboratory are educational and experimental in character, and so far have been largely confined to internal parasites of live stock, particularly of swine. No doubt you are all familiar with the splendid work done through this laboratory and its field activities in connection with ascarids of swine.

As previously stated, the projects coming within the direct supervision of the inspector-in-charge of the Chicago station, other than the particular work previously cited, involves many of the projects of the Bureau. The importance of some, however, is much greater than others, because of the natural conditions controlling the work in this area. In the way of volume, meat inspection is the major project at the Chicago station.

There are approximately 70 establishments operating under the Federal Inspection Act in this area, and approximately 365 employes, of a total of 400 employed at this station, are engaged in meat inspection work. Meat inspection is strictly a regulatory work, and as conducted by the Bureau, has become the largest and most efficient service of its kind in the world.

Scope of Meat Inspection

Meat inspection includes ante-mortem and post-mortem inspection of all animals slaughtered at Federal-inspected establishments; supervision of the manufacture and preparation of all meat food products and their inspection after final process and at time of shipment; the labeling and marketing of products in their finished state; enforcement of all laws and regulations relative to sanitation, adulteration, false labeling, *et cetera;* enforcement of the Net Weight and Volume Law. Summarizing, it is the duty of the meat inspection force to see that no products from carcasses which are unwholesome because of disease, reach edible channels; to destroy and denature all carcasses and parts so diseased; to detect and condemn on re-inspection, and effectually destroy meat products which become unsound or unhealthful; to prevent the use of unhealthful ingredients in the preparation of meat products; to prevent adulteration of meat products; to prevent misleading or false labeling of meat products and insure that meats are not contaminated through insanitary handling or other insanitary exposures.

Field inspection or inspection for contagious or infectious diseases of live stock at the Chicago station, includes not only live stock passing through the Chicago yards, but also the

northern half of the State of Illinois, and in a limited way, Western Indiana, Southern Wisconsin and Eastern Iowa.

In connection with this work we have to tuberculin test cattle leaving the Chicago yards for breeding and dairy purposes; the immunization of swine going out for purposes other than immediate slaughter; the dipping of sheep; the cleansing and disinfecting of yards, pens, cars, *et cetera*, when such service is required; the inspection of animals imported into this country; the inspection of and certifying to animals intended for export; the enforcement of all quarantine laws and regulations, and laws and regulations covering the interstate movement of live stock.

In an experimental way, as yet, vaccination of feeder and stocker cattle for hemorrhagic septicemia has been instituted in the Chicago Stock Yards. At this time it cannot be stated as to what extent this work may develop, as it has not gone beyond the experimental state.

Inspection of Reactors

One of the important projects which has recently come into prominence, at the Chicago station, is the identification, post-mortem inspection and reporting to proper authorities of reactor cattle coming to market. This has grown to such proportions that now it is not considered unusual to receive from 800 to 1,000 head of such cattle weekly. To handle these animals properly is no small task, as each animal must be identified, inspected and reported individually and an error in one instance is likely to cause a very embarassing item.

As public servants, the employees of the Bureau of Animal Industry cover a very large and varied field and I venture to state that but few have a fair knowledge of the extent of the service rendered by this Bureau. It is true that many have a very complete knowledge of certain limited or special service in which they are particularly interested or with which they may be closely in contact, but apparently there is a failure on the part of most people to familiarize themselves with the Bureau activities in the fullest sense, and I am very glad to have had this opportunity to give, in a brief way, some outline of the organization and work of the Bureau in general at the Chicago station.

No country has made more rapid progress than has the United States in the study of breeding, feeding and care of animals, and in the control and eradication of the diseases to which they are subject. And there is no country where live stock growers are

furnished with as much valuable information, in the form of books, bulletins and reports, as in the United States. All this is accomplished through the efforts of National and State officials, and State institutions working in cooperation. We may justly feel proud of our National and State institutions, and the work they are doing.

DROWNING THE SPOTTED PUP

Full many woes beset the soul through man's short mortal life,
But hurried pace to reach the goal beguiles the years of strife.
I am not fond of hate nor wrath, at knocks I do not fret;
If one would smooth the thorny path, 'tis better to forget.
The griefs and cares of other days I carefully conceal,
While in my heart there is a wound, a scar that will not heal.
There looms in memory the day I drank the bitter cup,
When father fixed that rope and stone to drown the spotted pup.

This victim of my father's choice had come a month before
To blend his lusty, whelpy voice to that of brothers four.
I plead with scientific lore to tell why fate allots
Just one color to puppies four and to the fifth all spots.
At any rate, I had to pick this spotted dog for mine,
Perhaps from pity, none the less, I loved his bark and whine.
But out of young life's dreggy bowl I drank a lasting sup,
When father walked down to the pond to drown my spotted pup.

Though time has somewhat dulled the pain, there lingers in my mind
The pall of sorrow and the rain of tears that made me blind.
The intervening years have solved of problems not a few,
And in their course they have dissolved some of the doubts I knew.
Existence seems a mazy plan which we at times distrust,
And yet the destiny of man brings naught but what is just.
Still through it all I cannot help but bring the question up,
Why bear with some two-legged whelp and drown the spotted pup?

—*T. P. White.*

THE RELATION OF THE CIVIL VETERINARY PROFESSION TO THE ARMY VETERINARY SERVICE[1]

By Lt. Col. N. S. Mayo, *Vet. O. R. C., Chicago, Ill.*

It will be admitted that the relation of the veterinarian to our National army service, is, or should be that of every sincere patriotic citizen, in fact as professionally trained men of more extensive education than the average citizen we have a greater responsibility than the average man. A good many veterinarians are graduates of schools established by the State for the training of its citizens, not for the selfish purpose of making more money for themselves, but that they shall be fitted to give a larger and better service to the state.

The states have established great institutions of learning such as this and maintain them generously with public funds for the purpose of training young men and women for leadership and public service. I do not know the amount the State invests in the education of each individual student here, but it is considerable, and such students are under a moral obligation to return to the people a greater service than one who has not had the advantages of a liberal education.

It has been proven by centuries of experience that society must be organized to protect the weak, curb the ambitious and to control human activities as justly as possible. In order to make social regulations effective, there must be force, either civil or military, or both.

Most of us civilian citizens are so engrossed with our professional or business affairs that we do not give the attention we should to national problems and particularly to our national security upon which our happiness, prosperity and national existence depends. If the question is raised, we say, "Let the army and navy take care of that; they have always done it well."

There are many of our citizens and some of our politicians who uniformly oppose all things military. The politician is usually animated by a desire for notoriety or political capital. Then there is the pacifist or conscientious objector, who views all things military as unholy, and with the pacifist is allied the radical, who aims to destroy our established government and emulate his "comrades" in soviet Russia. The pacifist we must

[1]Delivered at the fourth annual Veterinary Conference, University of Illinois, July 10-11-12, 1923.

convince of his error, if we can, and if we cannot, we must be prepared with a sufficient force to save some of his just ideals, when threatened by some force more unholy than our army. The radical who would destroy our government, that has been evolved from centuries of human trials and experiences, we must control by force; all other methods have been proven useless.

It has been the traditional policy of the United States of America to maintain as small an army as is consistent with public safety. There are many citizens who think that, in the reaction following the great war, and considering the unsettled condition of the world, Congress has reduced our armed forces below the minimum of safety.

A large number of citizens believe that in our republic, where a very small standing army is maintained, a compulsory military training of at least six months should be established for all physically and mentally qualified young men. Such a training would make for better citizenship, a stronger and better government, a bulwark in time of peace and an economically trained and readily available force in time of national need. Our republic is not and never will be a militaristic nation and there is no danger that we will ever be dominated by a military hierarchy.

While Congress has not thought best to provide for conpulsory military training, it has made limited provision for voluntary trainng and for a reserve corps. It is our duty as patriotic citizens to utilize the means provided by our government.

The first and highest duty as a citizen is to render to our country whatever service we can to protect our republic from danger, either from within or without. The Reserve Corps, planned by our military experts, offers a practical method of classifying our abilities, so that in a national emergency they can be utilized to advantage. All are familiar with the confusion and inefficiency of our army veterinary service when we entered the World War, due to lack of organization and military training of our profession. Past experience has painfully demonstrated that in a national emergency soldiers are readily obtained, but to secure trained officers to lead them has been a serious problem.

The Army of the United States

The National Defense Act, as amended June 4th, 1920, reads:

Be it enacted by the Senate and House of Representatives of The United States of America in Congress assembled, That the Army of the United States shall consist of the Regular Army, the National Guard while in the service of the United States, and the Organized Reserves, including the Officer's Reserve Corps and the Enlisted Reserve Corps.

Organization of the Army.—The organized peace establishment, including the Regular Army, the National Guard, and the Organized Reserves, shall include all of those divisions and other military organizations necessary to form the basis for a complete and immediate mobilization for the national defense in the event of a national emergency declared by Congress. The Army shall at all times be organized so far as practicable into brigades, divisions, and army corps, and, whenever the President may deem it expedient, into armies.

Officers' Reserve Corps.—For the purpose of providing a reserve of officers available for military service when needed, there shall be organized an Officers' Reserve Corps, consisting of general officers, of sections corresponding to the various branches of the Regular Army, and of such additional sections as the President may direct. The grades in each section and the number in each grade shall be as the President may prescribe. Reserve officers shall be appointed and commissioned by the President alone, except general officers, who shall be appointed by and with the advice and consent of the Senate. Appointment in every case shall be for a period of five years, but an appointment in force at the outbreak of war, or made in time of war, shall continue in force until six months after its termination. Any reserve officer may be discharged at any time in the discretion of the President. A reserve officer appointed during the existence of a state of war shall be entitled to discharge within six months after its termination if he makes application therefor. In time of peace, a reserve officer must, at the time of his appointment, be a citizen of the United States or of the Philippine Islands, between the ages of 21 and 60 years. Any person who has been an officer of the Army at any time between April 6, 1917, and June 30, 1919, or an officer of the Regular Army at any time, may be appointed as a reserve officer in the highest grade which he held in the Army or any lower grade; any person now serving as an officer of the National Guard may be appointed as a reserve officer in his present or any lower grade; no other person shall in time of peace be originally appointed as a reserve officer of Infantry, Cavalry, Field Artillery, Coast Artillery, or Air Service in a grade above that of second lieutenant. In time of peace appointments in the Infantry, Cavalry, Field Artillery, Coast Artillery, and Air Service shall be limited to former officers of the Army, graduates of the Reserve Officers' Training Corps, as provided in section 47b, hereof, warrant officers and enlisted men of the Regular Army, National Guard, and Enlisted Reserve Corps, and persons who served in the Army at some time between April 6, 1917, and November 11, 1918. Promotions and transfers shall be made under such rules as may be prescribed by the President, and shall be based so far as practicable upon recommendations made in the established chain of command, but no reserve officer shall be promoted to any grade in time of peace until he has held a commission for at least one year in the next lower grade. So far as practicable reserve officers shall be assigned to units in the locality of their places of residence. Nothing in this act shall operate to deprive a reserve officer of the reserve commission he now holds. Any reserve officer may hold a commission in the National Guard without thereby vacating his reserve commission.

According to the plans of the General Staff 200,000 reserve officers are needed. At present there are only 72,000 reserve officers in all branches of the service.

In order to join the Veterinary O. R. C. a veterinarian must be a citizen of the United States, a graduate of a recognized veterinary college, between the ages of 21 and 60 years.

Requirements to Join.—Veterinarians of the World War can join on their war record, up to Nov. 11, 1923. Application must be made upon prescribed forms and the veterinarian must take a physical and mental examination. The grade given will depend upon the qualifications and experience of the veterinarian, but

no officer who has served in the World War can be appointed to a higher grade than he held in the War. An officer must serve three years in the grade to which he is appointed before being eligible for promotion. Appointments are made for five years. In time of war officers of the reserve corps are assured of priority service in time of war.

Assignment.—Veterinary officers will be assigned to units of the organized reserve or for special service. So far as possible officers are assigned to units nearest to their home. All reserve officers are, in time of peace, under the administrative control of the Corps Area Commander.

Training.—Opportunity for training is given by 15 days active duty each year with pay, and also by correspondence courses. If an officer is called for fifteen days' active training he may be exempt if special circumstances warrant.

Active Duty.—A reserve officer will be called to active duty in a national emergency so declared by Congress and he may be called for 15 days' training as indicated. When on this Service he receives the pay and allowances of his rank.

Separation.—In time of peace resignations of reserve officers will be accepted for good cause or they may be discharged for cause. Reserve officers are not entitled to retirement.

To those of us whose military training and experience has been limited, the Reserve Corps offers a splendid opportunity to obtain theoretical training that should be helpful in a national emergency. We believe as do a majority of our citizens, that Congress should make ample provision for the practical training of the Reserve Corps in the various military centers under the immediate supervision of military officers of thorough training and experience. With a suitable Reserve Corps properly trained, an efficient agent for preparedness is established.

Through the Reserve Corps, we can get reliable information from experts as to the actual military needs of our country. We can help in developing a public sentiment favoring a military force to meet our national needs, and we can go to our representatives as citizens, who know our country's military needs and help in securing proper and just legislation. We, as members of the Reserve Corps, are better fitted to overcome ignorance and prejudice regarding our army among our fellow citizens.

The Reserve Corps offers a real opportunity to assist in developing and upholding high ideals, not only as to citizenship, but as to our national policy. We are proud of the standard already

established. Our unselfish policy in the World War, in Cuba and the Philippines, as carried out by our army and navy, has been the pride of every patriotic citizen, and in developing these ideals we shall be better citizens. We do not want an armed force for conquest, but for public safety; to uphold our national ideals; and as a means to aid and help those people less fortunate.

We do not want war, but if war comes, as it will, the Reserve Corps is a valuable agent of preparedness. War is only one phase of the eternal struggle for existence. That this struggle will continue as long as life exists is as certain as the law of gravity. The only way to reduce suffering and human agony is to be prepared. To those false prophets, who cry "Down with force," we can only refer to our Savior who "came to bring peace on earth and good will to men," yet the great Prince of Peace was compelled to use force to drive the wicked money-changers from the temple.

HUMANE SLAUGHTERING

The new law of Holland relative to the slaughtering of animals compels humane stunning, not only in private, but in all public abattoirs. By the new law it is forbidden to attempt to stun by "a blow upon the head, or behind the ears," to begin dressing before the "body is completely inert," to "hang up before stunning." The stunning must always be "by means of devices with which in some mechanical way the brain is destroyed." Exception is made where Hebrews slaughter.

—*Our Dumb Animals.*

O WONDERFUL HORSE!

"O Horse, you are a wonderful thing; no buttons to push, no horn to honk; you start yourself, no clutch to slip; no spark to miss, no gears to strip; no license-buying every year, with plates to screw on front and rear; no gas bills climbing up each day, stealing the joy of life away; no speed cops chugging in your rear, yelling summons in your ear. Your inner tubes are all O. K., and, thank the Lord, they stay that way; your spark plugs never miss and fuss; your motor never makes us cuss. Your frame is good for many a mile; your body never changes style. Your wants are few and easy met; you've something on the auto yet."—*Ranger H. R. Elliott, of the Malheur, in American Forestry (Washington).*

LIMBERNECK IN CHICKENS

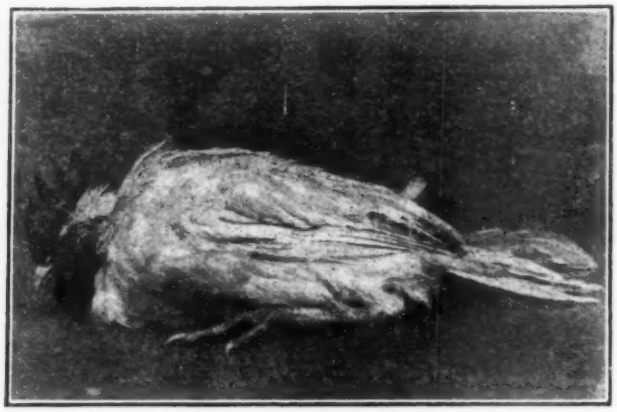
By L. P. Doyle

Purdue University Agricultural Experiment Station, Lafayette, Ind.

There is a form of trouble prevalent during the late spring, summer, and fall that is responsible for heavy losses among chickens. It seems probable that, in some years, in Indiana, this trouble is second to none as a cause of loss among chickens during the warmer portion of the year. It occurs occasionally in other birds, but is especially important among chickens.

Symptoms

The symptoms shown by affected birds conform to those usually considered as "limberneck." In rapidly fatal cases extreme prostration may be the only symptom shown. Usually,



A cockerel poisoned by eating maggots from a hog's carcass. It shows the partially open eye so often seen in affected birds in natural outbreaks of limberneck.

however, an affected bird shows a group of symptoms that are quite characteristic. The bird is found sitting or lying on its sternum and abdomen, with its head on the ground and its eyes closed. There is considerable mucus on the beak and in the mouth, so that soil, leaves or chaff may cling to the beak in such a way as to be conspicuous. The comb and wattles are red, and the body temperature is normal or subnormal. There is usually a watery discharge from the vent, but the urine is normal in color. When an attempt is made to rouse the bird it may not be able to raise its head, or it may raise it unsteadily and partly

open its eyes—the eyes usually never becoming more than half open. The partially opened eye is a striking symptom in this affection. When made to move, the bird takes a few steps in a crouching position (or it may assume a "duck-like" posture) and then goes down again on its sternum and abdomen. The difficulty with which the bird moves suggests that there is a marked hypotonicity of the muscles concerned in walking. In some cases the affected bird's feathers are very easily pulled from the body.

An appreciable proportion of affected birds recover without treatment. The manner of recovery is quite characteristic. Recovery is either fairly rapid and complete or it is marked by a peculiar aftermath that may continue for two or three days. During this aftermath the bird makes futile attempts to eat, in which it picks at the food but the beak fails to reach the food by one to three inches.

Post Mortem Findings

Post-mortem examination of birds dead of limberneck usually does not show any recognizable gross lesions. In some cases there is a well marked congestion of the duodenum. Frequently maggots or fly larvae are found in the crop. However, as will be seen from experiments discussed later, the mere finding of fly larvae in the crop of a dead bird does not establish a diagnosis of the intoxication commonly known as limberneck.

In September, 1920, Wilkins and Dutcher[1] reported that they produced limberneck in chickens by feeding them larvae of *Lucilia caesar* that developed from eggs laid on the carcass of a chicken that died of limberneck. They also found that paralysis and death could be produced in guinea pigs by feeding them as few as one or two larvae.

Saunders[2] and his coworkers had previously reported that the larvae of *Lucilia caesar* were extremely toxic when fed to guinea pigs.

In January, 1922, Bengtson[3] reported the isolation of a toxin-producing anaerobe from the larvae of *Lucilia caesar*. She found that this organism was culturally distinct from the strains of *Bacillus botulinus* isolated in this country. She also found that so-called polyvalent botulinus antitoxin (types A and B) did not protect against the toxin produced by the organism isolated from the larvae.

[1]Jour. A. V. M. A., 1920, Vol. 57, p. 653.
[2]Jour. Mo. State Med. Assoc., 1913-14, Vol. 10, p. 305.
[3]Public Health Report, 37, 164, Jan. 27, 1922.

By feeding chickens carrion and maggots from carrion, the present writer has produced symptoms in chickens indistinguishable from those occurring in natural outbreaks of limberneck. The findings of others regarding the toxicity of such maggots for guinea pigs were also confirmed. From some of the published articles on poisoning from maggots, one is apt to get the impression that the fly larvae, especially that of *Lucilia caesar*, plays an essential role in producing the disease.

Maggots Not Essential

That the maggot does not play an essential part in the production of the toxin is shown by the following experiment:

During the early part of September, 1921, a fat hen was killed; some muscle was taken from her breast, divided into two portions and placed in separate bell-jars. Several green "blow-flies" were placed under one of the bell-jars while the other one was kept free from flies. At the end of four days there were maggots in and on the muscle, where the flies had been placed, but none in or on the muscle that was kept free from flies.

A 500-gram guinea pig that was fed 16 of the 4-day-old maggots died in 3 days. A 350-gram guinea pig that was fed 2 grams of the muscle kept free from flies died within 18 hours.

Effect of Boiling Poisonous Meat and Maggots

A 350-gram guinea pig was fed one-fourth gram of the chicken breast-muscle kept free from flies. The guinea pig died within 18 hours.

A 495-gram guinea pig was fed 2 grams of small bits of the chicken muscle that had been dropped into boiling water, allowed to remain 2 minutes and was then quickly cooled. This guinea pig remained well for at least 2 weeks.

A 450-gram guinea pig, that was fed 16 maggots from a hog's carcass, died within 36 hours. At the same time a 420-gram guinea pig was fed 18 of the maggots that had been in boiling water for 3 minutes. The latter guinea pig remained well for at least 10 days.

Effect of Botulinus Antitoxin

Since symptoms indistinguishable from those occurring in natural outbreaks of limberneck, were produced in chickens by feeding them carrion and maggots from carrion; and, since many of the natural outbreaks of limberneck can be traced to such a cause, it was decided to test the protective action of "polyvalent" botulinus antitoxin against the toxic substance in carrion and

maggots from carrion. The results of such a test on guinea pigs are shown in Table I.

TABLE I

TEST OF THE PROTECTIVE ACTION OF BOTULINUS ANTITOXIN AGAINST THE TOXIN IN CARRION AND MAGGOTS

Wt. of Guinea Pig	Treatment	Results
450 grams	6 cc antitoxin,* intraperitoneally; 14 maggots from hog's carcass were fed 5 hours later.	Died, 3 days
200 grams	7 maggots	Slight symptoms recovered
350 grams	¼ gram of chicken breast-muscle kept free from flies	Dead, 18 hours
410 grams	8 cc antitoxin, subcutaneously; 2 hours later, ½ gram of above muscle.	Dead, 18 hours
650 grams	8 cc antitoxin, intraperitoneally	Remained well

*The antitoxin was polyvalent (types A and B); kindly furnished by Dr. Robert Graham, of the Illinois Agricultural Experiment Station.

Thus, it appears that the antitoxin did not protect guinea pigs against the toxin in the meat or maggots.

MAGGOTS AND CARRION SOMETIMES HARMLESS

That carrion and the maggots from carrion are sometimes not poisonous is borne out by the experience of poultrymen and by the following experiments:

Three grams of putrid sheep's lung were fed to a 280-gram guinea pig without any ill effect.

A 440-gram guinea pig was fed 10 six-day-old maggots from the sheep's lung, with negative results.

A 475-gram guinea pig was fed 20 maggots from the head of a chicken that died of cholera, with negative results.

MANURE AND MAGGOTS FROM MANURE

On a farm where limberneck was occurring in chickens it was noted that the chickens were eating a great deal of cow manure and maggots from the cow manure. Consequently some of the manure and maggots were fed as follows:

A 595-gram guinea pig was fed 7.5 grams of the cow manure.
A 570-gram guinea pig was fed 70 maggots from the cow manure.
A 380-gram guinea pig was fed 80 pupae from the cow manure.
All three guinea pigs remained well for at least two weeks.

Conclusions

It seems likely that the common source of the toxic substance responsible for limberneck is carrion, or maggots from carrion. However, the maggots evidently play only a passive part in carrying the poison produced in carrion.

Limberneck is an important cause of loss among chickens during the warmer portion of the year.

Neither the fly nor the maggot is essential for the development of a toxin capable of causing limberneck.

The toxic substance in carrion and maggots is quickly destroyed by boiling.

Polyvalent (types A and B) botulinus antitoxin did not protect against the toxin in carrion and maggots.

Carrion and maggots from carrion are sometimes non-toxic for guinea pigs.

DEAN KLEIN HONORED

Dr. Louis A. Klein, Dean of the School of Veterinary Medicine, University of Pennsylvania, attended the joint annual meeting of the American Association of Medical Milk Commissions and the Certified Milk Producers' Association, in San Francisco, in June.

On the evening of June 24, a dinner was given in Dean Klein's honor, by Pennsylvania alumni in and near San Francisco. Those present were: Drs. Joseph P. Bushong, '06; John C. Corl, '19; George H. Hart, '03; John G. Jackley, '10; William Veit, '06; and Harry H. Howe, '09.

THE TEAMING HORSE

Eight years ago a friend said to us, "In five years you won't see a horse on the streets of our cities." The man who said it was careful in his statements and believed what he said. We have just read the remark of a large cartage operator in Philadelphia, Mr. James Gallagher. He says, "I would be $50,000 better off if I had never seen a motor truck, and if I were offered, gratis, a fleet of motor trucks and compelled to use them for five years, I should go broke." It looks as if the humane societies of the country would have to be looking after the interests of the horse for many years to come.

—*Our Dumb Animals.*

THE MACROSCOPIC AGGLUTINATION TEST AS INFLUENCED BY THE FATTY CONTENT OF THE BLOOD SERUM OF FOWLS

I. Effect of Starvation Upon Fatlike Content

By E. R. HITCHNER

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During the past fall and winter the blood of over 4000 fowls has been tested for bacillary white diarrhea by means of the macroscopic agglutination test. In many cases the fat content of the blood serum was so heavy that the accuracy of the test was greatly impaired. Since most of the samples were drawn at a period when the hens were laying heavily, and the ration fed was high in protein and fat, it was natural to suppose that these factors were the cause of the high proportion of fat in the blood. Since the efficiency in the control of white diarrhea depends upon the accuracy of the test, the following experiments were conducted in an effort to decrease the fatty content of the serum at the time of examination.

In a review of the literature relative to the effect of starvation upon the fat in the blood, it was found that the experimental results were not in complete agreement.

Bloor[1] in a series of experiments conducted with dogs finds an increase in the fat in blood during a period of starvation up to five days, followed by a decrease. By stuffing a dog, which had previously shown no increase in fat following a period of starvation, with fats and proteins, and then starving for five days, an increase during the period of starvation was noted. He concludes that this increase may be due to the nutritional condition of the animal and depends on one hand on the readiness with which the fat in the fat-stores was available, and on the other hand upon the rapidity with which the fat was burned. The author does not state whether the increase was noted in the serum, as the data are apparently based upon the analysis of the whole blood.

In experiments conducted with laying and non-laying hens, Warner and Edmond[2] find the fat content to be higher in the laying than in the non-laying fowls, although both were fed the same ration. They state that this may be due to the fact that

[1]Bloor, W. R., 1914, Fat Content in Normal Blood, J. Biol. Chem. *19*, pp. 2.
[2]Warner, D. E. & Edmond, H. D. 1917, Blood Fat in Domestic Fowels in Relation to Egg Production, J. Biol. Chem. *31*, 281.

the fat stored in the body is taken by the blood and carried to the egg-yolk. They likewise find a correlation between the color of the legs, beak and vent, and the fat content of blood. Laying hens with pale legs should have a higher content than non-laying hens with yellow legs, indicating that non-layers may be storing fat in the body tissue. These investigators furthermore state that fasting hens for sixteen hours brings about no decrease in the fat content of the blood.

In conducting the agglutination test only the serum is used, hence any practice that would tend to decrease the fat content in the serum, regardless of the effect upon the whole blood, is of vital importance. Knudson[4] notes a marked increase in the turbidity of blood plasma following the ingestion of fat. Bloor[2] states that the blood serum, eleven to twelve hours after a meal, is clear and free from suspended particles and remains so during a period of fasting, although considerable quantities of fat must be passing from the fat-stores into the blood for use, especially after the second or third day. He states that it is probable that the fat is not being carried as such in the blood, but as some derivative more readily miscible with water, as lecithin.

The main difficulty encountered in conducting the tests throughout the winter months was the tendency of the fat, either to rise in the tube after mixing the serum and antigen, forming a scum on the top, or else to adhere to the sides as a flaky precipitate. When such conditions existed it was impossible to differentiate between positive and negative reactions.

In some preliminary observations upon the blood of hens that had been accidentally subjected to a period of starvation, it was found that the blood serum was free from fat and no difficulty was experienced in reading the reactions, whereas the test with other hens of the same flock fed before bleeding showed considerable turbidity.

In order to gain further information upon this observation, the following experiments were conducted. A flock of Rhode Island Red hens in good lay was divided into three lots of ten hens each. All groups were fed in the evening. Lot A, check, was fed the following morning and bled the same afternoon. Lot B received no feed the following day and was bled after fasting for 24 hours. Lot C was starved for 48 hours and then bled.

The serums were allowed to rise and the agglutination test

[2]Bloor, W. R., 1916, Fat Assimilation, J. Biol. Chem. *24* pp. 448.
[4]Knudson, A. 1917, Cholesterol Esters During Fat Absorption, J. Biol. Chem *32*, 337.

conducted according to the procedure recommended by Rettger[5]. After incubating for two days at 37° C, the tubes were read and the effect of starvation upon the test, as shown by the turbidity, was noted. The results are given in Table I.

TABLE I

STARVATION AND ITS EFFECT ON FAT CONTENT OF BLOOD SERA

	LOT A Check	LOT B Starved 24 hours	LOT C Starved 48 hours
Bird	Agglutination Solution	Agglutination Solution	Agglutination Solution
1	Fat heavy	Clear	Clear
2	Fat slight	Slight	Clear
3	Fat medium	Clear	Clear
4	Fat slight	Very slight	Clear
5	Fat medium	Clear	Clear
6	Fat flaky	Slight layer	Slight tube 1
7	Fat heavy	Clear	Clear
8	Fat heavy	Medium	Clear
9	Fat slight	Slight	Clear
10	Fat very turbid	Clear	Clear

From the data in Table I, it is apparent that starvation previous to bleeding markedly decreases the fat content of the sera.

It will be noted that the serum from every bird in Lot A contained sufficient fat to cause marked cloudiness in the resulting agglutination test-solution. In most cases, this turbidity was so great as to obscure the results. Starving for 24 hours caused a marked decrease in the fat in 50% of the birds, whereas starving for 48 hours produced sera that gave excellent results in every case. It is apparent, therefore, that fasting may cause a marked decrease in the fat content of the blood sera of fowls and that the accuracy of the agglutination test may be greatly improved.

In order to determine whether a shorter starvation period would produce similar results, three lots of Leghorn pullets were treated in the following manner: Lot A, check; Lot B, starved 24 hours; Lot C, starved 36 hours. The fowls were bled and the test conducted as in Experiment I. The results are given in Table II.

It will be noted from Table II, that starvation for 36 hours does not cause so marked a decrease as the 48-hour period. It may be that the difference in breed would account for these results. However, in the sera from Lot C the test-solution from

[5]Rettger, L. F. 1919, Method of Drawing Blood Samples and of Making Agglutination Test for Ovarian Infection in Breeding Stock. Bul. of Immed. Infor. No. 1, Storrs Ag. Exp. Sta.

TABLE II

FAT CONTENT OF BLOOD SERUM AS AFFECTED BY VARYING PERIODS OF STARVATION

	LOT A Check	LOT B Starved 24 hours	LOT C Starved 36 hours
Bird	Test Solution	Test Solution	Test Solution
1	Flaky	Turbidity medium	Clear
2	Turbidity medium	Tubridity heavy	Turbidity slight
3	Turbidity heavy	Turbiduty slight	Clear
4	Turbidity slight	Clear	Clear
5	Turbidity heavy	Clear	Clear
6	Clear	Turbidity Tube 1	Clear
7	Turbidity flaky	Clear	Turbidity medium
8	Turbidity medium	Clear	Turbidity tube 1
9	Clear	Clear	Turbidity very slight
10	Turbidity very slight	Turbidity heavy	Clear

only one bird (7) was so turbid as to cause any question in reading the test.

Although the results of the two experiments indicate that greater accuracy in the agglutination test would result from starving all birds in heavy lay, previous to bleeding, yet it is realized that such operations might cause a decrease in egg production. Since this is a vital question with the producer and would doubtless create considerable antagonism on his part, an experiment was conducted to throw some light on this.

Two lots of pullets of mixed breeds were placed in separate pens and fed alike for a period of one week. During this period the average daily egg production was recorded. Lot A, check (20 pullets), was bled on the eighth day without any period of starvation. Lot B (18 pullets) was starved for a period of 36 hours previous to bleeding. The average daily egg production was determined for a period of two weeks following the bleeding operation. These results are given in Table III.

TABLE III

EFFECT OF STARVATION ON EGG PRODUCTION DAILY AVERAGE

	One Week Before Bleeding	1st Week After Bleeding	2nd Week After Bleeding
Lot A	8	10	8.5
Lot B	8	4.2	6.6

It will be noted that starvation caused a marked falling off in egg production during the first week. For four days following the starvation period the daily production dropped to three. This was followed by a slow recovery until at the end of the

second week, the daily production had reached normal. Bleeding alone had no noticeable effect on the egg production.

The sera from the hens in Lots A and B were tested according to the usual procedures. Of the twenty birds tested in Lot A, only three gave clear sera, while in eleven cases the agglutination solution was turbid to such an extent as to invalidate the test. In Lot B, clear sera were experienced in eleven cases while in the remaining seven only one showed a heavy fat content. It is evident that starving laying hens previous to bleeding results in a marked decrease in egg production with a slow recovery, although the accuracy of the agglutination test, as evidenced by the clarity of the serum, is greatly improved. Although it may be suggested that birds in heavy lay be fasted for at least 24 hours previous to drawing the blood samples for the agglutination test for bacillary white diarrhea, the individual producer must decide which is of the greater importance, accuracy in the test and possible decreased egg production or uncertain test results with normal production.

Further work is to be conducted in an effort to decrease the fat content without any marked effect on egg production. Various diets of low protein and fat content will be tried during a period previous to sampling.

SUMMARY

1. The blood sera of hens in heavy lay gives very unsatisfactory results in the macroscopic agglutination test for bacillary white diarrhea.

2. The high fat content of the sera interferes with the accurate interpretation of the results.

3. Starving fowls for at least 36 hours previous to bleeding results in clear sera and excellent tests.

4. Starvation causes a marked decrease in egg production with a slow recovery after four days.

The whaling industry is very promising this season. Whales are reported early and plentiful on the grounds, the whale oil market is on the climb, and the demand for canned whale meat has become so pronounced that the prospective pack of the British Columbia whalers is already disposed of. The canned whale meat is mostly distributed from England.—*Dearborn Independent.*

IMMUNIZATION AGAINST HEMORRHAGIC SEPTICEMIA

By J. R. MOHLER, *Washington, D. C.*

Chief, Bureau of Animal Industry

A representative of the Bureau who attended the recent meeting of the Missouri Valley Veterinary Association, at Omaha, stated on his return to Washington that one of the veterinarians present seemed to have misinterpreted the proposed action of the Bureau in immunizing against hemorrhagic septicemia stocker and feeder cattle which are to be removed from public stock yards to farms and feed lots.

Reports have been received showing increasing losses during the past several years from this disease. Although it occasionally manifests itself in cattle that have not been moved from their home farms or range pastures, it is most prevalent in animals that have been shipped long distances, especially those that were unloaded at public stock yards or at rest stations for feed and water.

So much complaint has been received from purchasers of feeders and stockers in practically all sections of the corn belt that the matter was brought to the attention of the Secretary of Agriculture and the Bureau. On May 18 a committee representing the Traders' Live Stock Exchange, of Chicago, and the Chicago Live Stock Exchange, came to Washington and urged upon the Department the importance to the livestock interests of the country of putting into effect additional control measures to prevent as far as possible the heavy losses.

On June 21 the Chief of the Bureau of Animal Industry and the Chief of the Field Inspection Division met in Chicago representatives of the various interests involved to consider further the situation and plans of procedure.

After careful consideration of every phase of the subject, it was the consensus of opinion that in addition to continuing the control measures now in effect, which prohibit the shipment of visibly sick animals and require the cleaning and disinfection of yards and cars known to be infected, all stock yards regularly used in feeding, watering and resting live stock en route to or from public markets, all divisions in such markets set aside for the handling of feeder and stocker cattle should be cleaned and

disinfected at stated intervals; that arrangements should be made by the Department with the railroads to supervise the disinfection of cars, which will be furnished to the shippers upon request, and that the Department should produce and furnish and administer the material for all shippers who desire to have their animals immunized before they are removed from public stock yards. Immunization is optional with the shipper, and it was estimated that the Department might be able to furnish the material and administer it at a nominal price of ten cents per head.

When this procedure was urged by the live stock interests, it was made clear that although the Department would be glad to give all assistance possible there were no funds available either to produce the material or to administer it. In view of the present importance of this matter, the Live Stock Exchanges of the large cattle markets offered to advance funds, which is permissible under a law passed several years ago authorizing the Secretary of Agriculture to accept money from outside sources for such purposes when in his judgment it would be to the public interest.

At the time the matter was discussed with the representatives of the Live Stock Exchanges and others interested it was explained that the immunization of cattle against hemorrhagic semticemia is yet in the experimental stage, but the results thus far obtained in reducing losses are encouraging.

The offer of the Live Stock Exchanges to advance funds to begin the work was accepted, as there are good prospects of rendering a service to the purchasers of stockers and feeders in reducing their losses, and it seemed to present an opportunity to try the different varieties of protective treatment for a limited time and extensive experiments over a wide range of country. It is important to all concerned to ascertain the value of immunization against hemorrhagic septicemia and what treatment is most effectual. Since the Bureau does not have it in mind to continue the work as a permanent project, it would be of much interest to the practitioner if some procedure is established through the experiments which will prove effectual, or, on the other hand, to learn that the immunization is not satisfactory.

While the Bureau is interested, it does not have the authority to specify what Live Stock Exchanges shall charge for immunizing cattle that pass through the different stock yards, but it is presumed the cost will be reasonable.

From the interest manifested by the various Live Stock Ex-

changes in the beginning it was thought that the plan would be put in operation at all the leading live stock markets. At present the Bureau is asked to extend its cooperation only to the markets located at Chicago, Illinois; Wichita, Kansas; and Indianapolis, Indiana. It has been learned recently that the Sioux City (Iowa) Live Stock Exchange has turned over the work at that market to a Sioux City serum company. Thus it seems that the experiments cannot be conducted on as extensive a scale during the present season as seemed to be possible at the beginning. But it is hoped that sufficient experimental field work may be done between now and spring to give us additional information in regard to the value of the immunization treatment and the variety of treatment that gives the most satisfactory results.

If the reports obtained from the owners of vaccinated cattle give the satisfaction expected, Congress will be asked at the coming session this winter to make an appropriation to cover the supervision of this work. When such funds become available, the vaccination for hemorrhagic septicemia at the stock yards will be placed on the same footing as hog cholera vaccination at these yards, where approved commercial vaccines will be used by veterinarians acceptable to the stock yards companies and the Bureau, but under the supervision of a federal veterinarian.

Raising queen bees brings a Calallen, Texas, man an annual revenue of more than $50,000, most of which is clear profit. Breeding queen bees is done partly by artificial means. He figures on obtaining about 100 queens from every hive of 2,000 to 3,000 working bees, instead of only one queen. Queen bees bring from $1 to $2.75 each.—*Dearborn Independent.*

A rogues' gallery of insects is being organized by the American Nature Association in Washington. The pests are to be identified and information as to their migrations gathered together with the best methods of opposing them. Such insects as the Hessian fly and the boll weevil will no doubt head the list of undesirables. —*Dearborn Independent.*

The ancient game of polo had an illustrious history in the East before the British Army carried it home from India and made it fashionable in the British Isles and America. About A. D., 600, polo, which had traveled from Persia to Turkestan and Tibet, became popular with the Chinese where the women played as well as the men.—*Dearborn Independent.*

CLINICAL AND CASE REPORTS

(Practitioners and others are invited to contribute to this department reports of unusual and interesting cases which may be helpful to others in the profession.)

FRACTURE OF FEMUR IN AN ELEPHANT[1]

By W. Reid Blair, *New York, N, Y.*

At the last meeting of our Association the chairman of the Program Committee announced that some of those present would receive a telephone message to present a case report at this meeting. During my absence from home such a message was received there, requesting me to present a case report on a wild animal, and not being able to present an alibi, I beg to offer the following:

Early one November morning, two years ago, our female African elephant "Sultana" was reported to be very lame in the left hind leg. Upon examination she was found painfully lame, and exhibiting an enormous swelling around and below the stifle joint. At the time, a fracture or dislocation of the patella was suspected, but owing to the enormous swelling about the joint, manipulation of the part was difficult, and I was unable to detect any evidence of crepitation which would indicate fracture.

The temperature of 100° F. for the first two days indicated a slight fever, but not enough to suggest lymphangitis. Six ounces of potassium nitrate was given in a pail of water twice daily.

While the swelling increased and involved the entire limb below the stifle joint, the lameness seemed to improve somewhat under the daily treatment of alternating hot and cold water irrigation, by means of a hose, followed by the application of stimulating liniments. Beyond the inability to use the leg or place any weight upon it, the elephant gave no decided evidence of discomfort; the temperature after two days was normal (98° F.) and the appetite improved.

Owing to the fact that the elephant could not use the leg she was reluctant to make any attempt to lie down at night, and as a result of the constant standing on the other hind leg, and trying to save the injured one in moving about the stall, she dragged the well foot and wore away the pad and front nails so much that a form of pressure necrosis developed. This latter condition

[1]Read before the Veterinary Medical Association of New York City, June 6, 1923.

was treated with difficulty. Finally, after several weeks, she did lie down, and after letting her rest in this position for several days she was raised and supported in a sling, but she soon became unable to support herself in the sling and was finally humanely destroyed by shooting.

After the leg had been carefully dissected, it was found that the injury consisted of a fracture of the internal condyle of the femur, with displacement of the condyle. The displacement of the broken bone had prevented any repair of a bony nature taking place, although the attempted repair of the injury in the form of new-formed fibrous tissue was enormous. The capsular ligament was obliterated and replaced by a large, fibroid, capsular sac containing fibrin and inflammatory exudates.

Just how the elephant sustained a fall sufficient to cause such a violent fracture of the femur is shrouded in mystery; but I suspect it may have been caused by the animal slipping off the side of the concrete runway, leading from the outside yard to her stall, inside the building.

If she had accidentally stepped off the runway half-way up, she would have dropped on that leg about 18 inches, and by throwing her ponderous weight on that leg it is quite reasonable to suppose such an injury could have occurred.

PSEUDOLEUKEMIA IN A COW

By R. W. MERRIMAN, *Ames, Iowa*

Senior Veterinary Student, Iowa State College

Report on Case No. 642, a grade female bovine, 12 years old and weighing 1100 pounds. Entered clinic April 30, 1923.

History: The cow calved some time ago. She was six months pregnant at the time she entered the hospital. Dr. Walsh, college clinician, was called to attend the case about three weeks preceding her entrance. At that time the animal showed a marked shoulder lameness in the left front limb. The owner said the animal had been lame intermittently for some time but that previously lameness occurred in a hind limb. She went severely lame a day or so before the first visit. She was tested for tuberculosis six years ago and passed at that time. On April 30th the cow was brought to the hospital.

Symptoms: Pulse 84, respirations 90 and labored, temperature 102.2° F. Bloating was evident. General condition was fair. Swinging- and supporting-leg lameness of the left front

limb. Upon moving the animal forward, the limb was markedly abducted and the toe of the affected limb was dragged when the animal moved forward.

The mandibular, prescapular, axillary and supra-mammary lymph glands were enlarged and rather tense, but their normal outline was preserved. There was extensive edema over the entire region of the brisket. Mucous membranes were anemic. The animal soon became listless and refused feed. On May 2nd the intradermal tuberculin test was applied. The readings were made at the 48th, 72nd and 96th hours following the injection and found negative. The cow underwent rapid emaciation and on May 3rd she was unable to walk. Soon she developed a profuse fetid diarrhea. The temperature rose to 105.4°, pulse 110 and respirations 66, very labored.

On May 4th a portion of the left axillary lymph gland was resected and a detailed microscopic examination was made of it. Nothing of diagnostic value could be found. Examination of the blood showed:

Hemoglobin—75%
Red blood corpuscles—2,800,000
White blood corpuscles—6,000

Examination of the lungs revealed increased vesicular breathing only. On May 5th the cow aborted an immature calf. May 7th an autopsy was held with the following findings:

1. Marked edematous infiltration of subcutaneous tissues of the pectoral region.
2. The prepectoral, bronchial and mediastinal, sublumbar, supramammary and inguinal lymph nodes and vessels were markedly enlarged. The nodes were from 50 to 60 times their normal size, but their normal shape and internal structure were retained (medulla and cortex normal).
3. The spleen was enormous in size—weight 9½ pounds.
4. Metritis was present.
5. Very slight gastritis and enteritis.

In conclusion, the lesions were confined to the lynphatic system. The red cells were greatly decreased with a normal number of white cells. Post-mortem diagnosis was pseudoleukemia.

A camel in the midst of green grass languishes and grows thin, but surrounded by sagebrush and thorny desert vegetation he is thoroughly happy and contented.—*Dearborn Independent.*

REVIEWS

HISTORY OF THE EDINBURGH VETERINARY COLLEGE. O. Charnock Bradley, M. D., D. Sc., M. R. C. V. S., Principal of the Royal (Dick) Veterinary College, Edinburgh. 101 pages, with 17 full-page, half-tone illustrations. Published by Oliver and Boyd, Edinburgh, 1923. Half linen, 5 s; full parchment, 7 s. 6 d; (postage, 6 d. extra).

In connection with the celebration of the Centenary of the Royal (Dick) Veterinary College, of Edinburgh, Dr. O. Charnock Bradley, who has been Principal of this famous institution since 1911, has seen fit to record the history of the college, from 1823 to 1923.

As might be imagined, a great deal of the early chapters is devoted to the famous founder of the Edinburgh College, William Dick. For over a score of years this pioneer in veterinary education was the sole teacher in his school, as he did not start the formation of a staff until 1844. It is said of him that he was in advance of his time, in a great many respects, and this appears the more true as we read this history and become better acquainted with his aims and aspirations.

This work is a labor of love, as the proceeds of the sale of the book go toward the Fellowship Fund in connection with the Centenary Celebration.

COLLECTED PAPERS FROM THE MEDICAL RESEARCH LABORATORIES OF PARKE, DAVIS AND COMPANY. Dr. E. M. Houghton, Director. Volume 8. By various authors. 621 pages, with numerous illustrations in the text. Leather. Published by Parke, Davis & Co., Detroit, 1923.

This book contains reprints of seventy-three scientific papers written by members of the medical research staff, and published in various journals during the years 1919 and 1920. These papers cover such subjects as pharmacology, chemistry, bacteriology, botany, nutrition, endocrinology, parasitology, vitamins and animal pathology. Under the latter subject are noted papers on the subjects of infectious abortion, anthrax, hemorrhagic septicemia, blackleg, snuffles and anaphylaxis. Of particular interest to veterinarians are the Studies on Anthelmentics, in ten papers, by Maurice C. Hall.

ABSTRACTS

INFECTIOUS ABORTION IN DOMESTIC ANIMALS I. INFECTION OF SWINE AND RABBITS. H. M. Weeter. Jour. Inf. Dis., xxxii (1923), 6, p. 401.

Although it has been known for twenty-five years that *Bacterium abortum* was the cause of much of the abortion in cattle, the first recorded isolation of this organism from an aborted swine fetus was made in 1914 by Traum. Later, Good and Smith, of Kentucky, isolated *Bact. abortum* during an outbreak of abortion in a herd of swine. With this culture they were able to produce abortion in one sow by feeding and in another by intravenous injection.

The writer's work includes observations made to determine to what extent the general swine population, as observed in one of the large packing centers, was infected by *Bact. abortum*, and also includes experiments on the infection of swine by feeding bovine cultures and on the susceptibility of rabbits to infection through the alimentary and genital canals.

Organisms culturally and serologically identical with *Bact. abortum* (Bang) were isolated three times in 389 non-gravid swine uteri examined microscopically, of which number cultures were made in 259.

This organism was also isolated but once from a macerated fetus and its associated membranes in an examination of 289 gravid swine uteri of which number cultures were made in 181.

The agglutination reactions of blood serum of 435 sows slaughtered at abattoirs were positive in dilution of 1:50 in 14.7%, and in dilution of 1:100 in 19% of the specimens. 5.3% of the specimens of barrows' blood were positive in dilutions of 1:50 and 2.6% in dilutions of 1:100.

Feeding suspensions of *Bact. abortum* to a sow pregnant forty-eight days resulted in production of agglutinins, but not in abortion. Five healthy pigs and one macerated fetus were farrowed at the end of the normal gestation period. *Bact. abortum* was not isolated from the macerated fetus or from any portion of the healthy pigs. The agglutination reaction of the dam declined at, or shortly before, farrowing and was not increased by further feeding of the organism to the animal when not pregnant.

That the initial infection and subsequently ingested organisms were eliminated was indicated by the fact that *Bact. abortum* was not recovered from any of the internal organs, or the lactating and non-lactating mammary glands six months after the feeding of the last culture.

Other feeding experiments indicated a very high resistance of young swine to oral infection by the cultures used.

Experiments with rabbits showed that when fed live cultures of *Bact. abortum* these animals were readily infected in practically all cases. Young rabbits were infected almost as readily by feeding as older ones. With one exception agglutinins did not develop in these animals as a result of frequent implantation of the organism in the genital tract.

S. S.

THE PRESERVATION OF NATURAL COLORS IN GROSS SPECIMENS. Oskar Klotz. Jrn. of Lab. and Clin. Med., Vol. VIII, No. 8, May, 1923.

A few years ago the author recommended a fluid for the preservation of natural colors of animal tissues, which has been used quite extensively with good results. Chloralhydrate is the chief ingredient of such fluid. The very high cost of chloralhydrate in Brazil led to a search for a satsifactory substitute. The present article indicates that carbon monoxide, contained in ordinary illuminating gas, can be employed in the initial preparation of the specimen in place of chloral, with excellent results. The final mounting is made in fluid containing a small percentage of chloralhydrate.

The method is as follows: After reducing the specimens to the desired size they are placed in a special jar containing a fluid consisting of:

Sodium chloride	8.5 parts
Sodium bicarbonate	5.0 parts
Formalin	30 to 50.0 parts
Water	1000.0 parts

The author finds that making the fluid isotonic with sodium chloride prevents considerable alteration of the tissue. The sodium bicarbonate is employed to overcome the acid condition which rapidly manifests itself in fresh specimens. While with but 3 to 5 per cent formalin it requires a little more time to fix specimens, a more uniform fixation is obtained throughout the tissue and no appreciable distortion occurs. The jar used is

provided with an inlet, near the base, for the intake of gas and an outlet at the top or in the tightly fitting cover. After placing the specimens in the fluid and tightening down the cover, the lower inlet is connected to the gas line. Usually the gas pressure is insufficient to force the gas up through the fluid, so that it is necessary to attach a suction pump to the outlet. The flow of gas is continued for 15 to 20 minutes, the process being repeated each day for 5 to 7 days. With specimens containing large quantities of blood the fluid frequently becomes discolored and should be renewed. The quantity of fluid should be about five times that of the specimens.

It is stated that the use of carbon monoxide for the preservation of color gives rise to a beautiful bright red hue which is quite stable and is not easily reduced by the formalin. The red blood cells do not lake and within a few days the blood is well set in the blood vessels, capillaries and tissues. Muscle hemoglobin retains a good color.

When the specimen is well fixed it should be immediately mounted in an air-tight jar, containing fluid prepared as described above, but to which has been added 2 per cent of chloralhydrate.

R. A. K.

BULBAR PARALYSIS IN CATTLE DUE TO THE ACTION OF A TOXIGENIC BACILLUS, WITH A DISCUSSION ON THE RELATIONSHIP OF THE CONDITION TO FORAGE POISONING (BOTULISM). H. R. Seddon. Jour. Comp. Path. and Thera., XXXV, (1922), 147.

The writer isolated from the bones of an animal that had died of the disease an anaerobic toxigenic bacillus. The organism differs morphologically and culturally from *B. botulinus* (*Clostridium botulinum*). The name *B. parabotulinus* is proposed.

The disease was reproduced in horses and cattle by the subcutaneous injection of small amounts of the toxin. Definite results were not obtained by feeding the culture. Guinea pigs and sheep were susceptible to oral administration of toxin.

Seddon discusses the clinical aspects in considerable detail. Two forms are recognized: (a) the paralytic, and (b) the cripply. In the former there is difficulty in eating, salivation, protrusion of the tongue, staggering, especially of the hind legs. The temperature remains normal. The duration is from 36 hours to 2 weeks. In the "cripply" type there is general unthriftiness,

and lameness of the forelegs. The bone-chewing habit is partially constant in both forms.

It was shown that the organism occurs in the decomposing carcasses of animals. It is inferred that cattle which have formed the bone-chewing habit acquire the toxic substances from this source.

F. S. J.

THE PRODUCTION OF ANTIBODIES IN RABBITS BY A SIMPLIFIED INTRATRACHEAL METHOD. F. S. Jones. Jour. Exp. Med. xxxvii, (1923), pp. 789-798.

The author describes the technic to be used for the production of antibodies by means of intratracheal injections. The animals used were rabbits and guinea pigs. The implement for the former was a milk- or teat-tube, 9 cm. long, with an external diameter of 3 mm. For the guinea pig it was a 2½-inch, 14-gauge, hypodermic needle. In both cases the tube is bent so that the bent portion forms an angle of about 70 degrees with the straight portion. The animals are etherized sufficiently to insure complete relaxation. After opening the mouth, the tongue is drawn forward with rubber forceps. The tube, after being immersed in paraffin oil, is passed backward over the tongue and into the trachea. In the rabbit it it allowed to penetrate to a distance of 1 cm., in the guinea pig 2 to 3 mm. The entire operation takes but 2 to 3 minutes. From 7 to 10 cm. of liquid can be given a rabbit without ill effects. The results (production of agglutinins, hemolysins, and precipitins) are in all respects comparable to those following intraperitoneal inoculations.

F. B.

ETT FALL AV AKTINOMYKOS I NÄTMAGE HOS TJUR. (A Case of Actinomycosis in the Reticulum of a Bull). Hilding Magnusson. Svensk Veterinärtidskrift, Stockholm, 1922, *27*, 121-123. (Reprinted from Abst. of Bakt.)

A case report with references to literature in which such cases have been described previously. Illustrated. There was no sign of actinomycosis of the jaw or tongue. The symptoms consisted of diminished appetite and occasional signs of tympanites.

H. J. S.

ASSOCIATION NEWS

MASSACHUSETTS VETERINARY MEDICAL ASSOCIATION

The May meeting of the Massachusetts Veterinary Medical Association was held at the Massachusetts Agricultural College, at Amherst, on May 16, 1923.

The train was met by autos conveying those who came to the college that way. After registering at the office of the Division of Veterinary Science and Animal Pathology, the members proceeded to the Dining Hall, where dinner was served to forty-seven.

After dinner we were taken by auto for a drive to the different grounds and buildings. The stock barns were very adequate and well arranged. Some of the best cattle of different breeds in the State were exhibited.

An address of welcome was then given by President Butterfield, who tried to impress upon our minds that he was, in a way, our servant, striving to serve us in the capacity allotted to him; and that it was our school as the citizens of Massachusetts, and that he wished us to consider it as such, and offer suggestions for the betterment of the Department, which might be of vital interest to all of us. He mentioned that we were always welcome to the school, individually or as a body, and that he would be pleased to have us arrange to meet with them at least once a year.

The next speaker was Dr. Gage, who has charge of the Division of Animal Pathology. He gave a review of the Department of Veterinary Science from 1867 until the present time. He spoke quite extensively of his work with the agglutination test, especially as it has been worked out in connection with fowl diseases. Specimens were shown as demonstrations, which certainly deserved credit. This is a subject which we, as veterinarians, will be called upon to know more about in the near future, and I think it was appreciated by all.

We were shown through the laboratories, which were very complete and well arranged. Several veterinarians present were able, while passing through the Museum, to recognize specimens of their handiwork in years gone by.

Owing to lack of time Dr. J. B. Lentz, Veterinarian of the Department, was unable to carry out his part of the program, and had to be contented by giving way, trusting to a future meeting and a longer time.

C. H. PLAYDON, *Secretary.*

THE VETERINARY ASSOCIATION OF NEW SOUTH WALES

The June meeting of the Veterinary Association of New South Wales was held at 56 Bridge Street, Sydney, at 8:00 p. m., on June 5, 1923, and the question of the control of veterinary biological products, so as to safeguard the farmer from exploitation by the sale of useless and wrongly named products and purchasing goods deleterious to the health of his stock, was fully discussed.

Professor J. D. Stewart, Chairman of the Veterinary Section of the Pan Pacific Congress, outlined the nature of the work to be carried out in Sydney, during August. The programme was to be extensive, and a number of lecture meetings were to be held jointly with the Agricultural Section. He was sure the agricultural community would benefit greatly by the discussions of renowned scientists from America, Japan and our sister States.

FRANK WHITEHOUSE, *Hon. Secretary.*

CALIFORNIA STATE VETERINARY MEDICAL ASSOCIATION

The annual meeting of the California State Veterinary Medical Association was held in San Francisco, California, June 21-23, 1923, in the Eagles' Building. There were present, according to roll call, 101 California veterinarians, and as visitors, Drs. H. Jensen, of Kansas City; Dr. Douglass, State Veterinarian of Arizona; Col. W. G. Turner, V. C., U. S. A.

The meeting was opened with a most interesting address by the President, Dr. J. L. Tyler, in which he pointed out the need of more closely following up our cases clinically, rather than to depend on some biological and pharmaceutical house to make a so-called diagnosis for us.

President Tyler called on Dr. H. Jensen, who briefly outlined his recent visit to Europe. Dr. Douglass, State Veterinarian of Arizona, honored us with a few remarks on conditions in his

state. The morning session, after considering some minor business, adjourned to meet at 1:30 p. m., when a very interesting paper was read by Dr. Robert Jay, U. S. B. A. I., "Recent Literature on Swine Diseases."

Dr. H. H. Hicks, Inspector-in-charge, B. A. I., San Francisco, gave a splendid paper on "The World's Situation Regarding Foot and Mouth Disease." Dr. F. H. McNair, Berkeley, read a most interesting paper on "The X-ray as a Diagnostic Agency." Dr. H. Sinai, Health Officer of Stockton, read a very instructive paper on "The Veterinarian and Public Health," pointing out the veterinary possibilities in that line of work, he being a veterinarian.

Dr. R. A. Ball's paper on "Hemorrhagic Septicemia" pointed out some of the newer observations in this disease. Dr. J. P. Iverson, Chief of the Division of Animal Industry, gave a detailed report on tuberculosis eradication by counties in California. Dr. M. J. O'Rourke's paper, on "Diagnostic Suggestion," called every one's attention to our possible errors through haste and lack of observation.

The banquet at the Palace Hotel was a brilliant success under the direction of Dr. G. H. Hart, toastmaster, and Dr. O. J. Kron, chairman. Through the courtesy of Col. W. G. Turner, Post Veterinarian, V. C., U. S. A., a most excellent clinic was held and a demonstration of equitation by the Division was enjoyed by all.

After luncheon, served at the Post, the meeting adjourned to the Eagles' Hall, where the literary program was continued, with papers by Dr. J. J. Frey, on "California Dairy Law Enforcement." Dr. E. H. Barger presented a paper, "Some Recent Experiments Regarding Transmission of Botulinus Toxin by Flies."

Dr. W. E. Frink cited some interesting practitioners' problems. Col. W. G. Turner, Post Veterinarian, V. C., U. S. A., gave a very interesting description of his time spent in the Orient. W. M. Thomas, of Johnson & Johnson, gave a most interesting paper on "Indications for Uses of Various Sutures."

The Friday evening meeting was called at 8 p. m., when a business session was held, together with the election of officers, which resulted as follows: President, Dr. J. M. Arburna, San Francisco; Vice-President, Dr. L. M. Hurt, Pasadena; Secretary, Dr. J. P. Bushong, Los Angeles; Treasurer, Dr. J. A. Boyd, Milpitas.

On Saturday morning, June 23rd, a small animal clinic was held at the San Francisco Dog and Cat Hospital, 1371 Fulton St., where a very interesting and instructive program was rendered, with a number of very unusual operations.

Saturday afternoon's program consisted of papers by Dr. J. F. McKenna, who had an article on "Twelve Years' History of the Association" and a paper by Dr. C. M. Carpenter on "*Bacterium Abortum* Infection in Calves." both of which were well rendered and interesting.

With a short business meeting, installation of officers and the selection of the next meeting place, which is San Luis Obispo, the meeting adjourned to meet at the University of California Farm School, Davis, California, in connection with the Short Course for Veterinarians.

J. P. BUSHONG, *Secretary.*

NORTHEASTERN PENNSYLVANIA VETERINARY MEDICAL CLUB

The Northeastern Pennsylvania Veterinary Club held a meeting, devoted to the consideration of the horse, at Conyngham Brothers' Clydesdale farm, near Wilkes Barre, Pa., June 26, 1923.

Mr. Joseph M. Vial, Horse Extension Specialist, Pennsylvania State College, gave a demonstration of the "Multiple Hitch." Dr. G. A. Dick, Professor of Animal Industry, University of Pennsylvania, spoke on "The Horse Industry in General." Dr. H. R. Church, Pennsylvania Bureau of Animal Industry, spoke on "The Horse Situation in Pennsylvania."

DELAWARE-LEHIGH VETERINARY CLUB

The Delaware-Lehigh Veterinary Club held a meeting at the Percheron farm of General Harry C. Trexler, at Allentown, Pa., on June 27, 1923.

Mr. Joseph M. Vial, Horse Extension Specialist, of Pennsylvania State College, Dr. H. R. Church, of the Pennsylvania Bureau of Animal Industry, and Dr. G. A. Dick, Professor of Animal Industry, University of Pennsylvania, were the speakers of the day.

MISSOURI VETERINARY MEDICAL ASSOCIATION

The annual meeting of the Missouri Veterinary Medical Association was held at Sedalia, June 27-28, 1923.

Mayor F. F. Hatton welcomed the Association on behalf of the city of Sedalia, and Dr. Elmer Johnston, of Excelsion Springs, responded on behalf of the Association. Dr. B. C. Davis then delivered the presidential address.

Dr. H. A. Wilson, State Veterinarian, addressed the meeting, his subject being "Dead Hog Indemnity and Compulsory Testing Laws of Our State, with Which Our Practitioners Should Be Familiar."

Dr. Horace Bradley, Deputy State Veterinarian of Missouri, presented a paper entitled "Federal Centralization of Power in Tuberculosis Eradication and Other Things Pertaining to the Tuberculin Test." In this paper Dr. Bradley directed attention to what he considered undue usurpation of power upon the part of the federal authorities, as well as unjust discrimination against veterinarians in state employ and in private practice.

Dr. R. Logan Allen gave some interesting case reports on "Some Carload Hogs" and "Parturient Paresis." Dr. A. T. Kinsley led the discussion on these reports.

After luncheon the program was resumed with the subject of "Rabies," presented by Dr. A. T. Kinsley, in the absence of Dr. A. W. James, who had been scheduled for this subject. Dr. Kinsley reported an outbreak of rabies, in which a number of mules and cows were lost. Upon investigation it was learned that on each farm where these large animals had died of rabies, there was a history of a dog having died some time previously, in all probability from rabies.

Dr. A. D. Glover gave a good, practical paper entitled "Abortion; Its Influence on Practice and How Dealt With." This was followed by a fine discussion.

Dinner was served at the Hotel Hildebrandt, with Dr. D. F. Luckey acting as toastmaster.

Mr. Robert S. Clough, County Agent, responded to "The Farmer, the Farm Bureau and the Veterinarian;" Dr. M. E. Gouge, "Cooperation of Allied Endeavors;" Prof. D. W. Chittenden, of the University of Missouri, "Essential Factors in the Profitable Production of Horses."

The film "Out of the Shadows" was shown at the Liberty Theatre, following the dinner.

The Thursday morning session was opened with a round-table discussion, conducted by Dr. A. T. Kinsley. Drs. C. N. and E. N. Hutcherson presented some interesting case reports. Dr. J. D. Ray served "Hash."

The election of officers resulted as follows: President, Dr. R. Logan Allen, of Windsor; Vice-President, Dr. J. L. Jones, of Blackburn; Secretary-Treasurer, Dr. Fred C. Cater, of Sedalia; Trustees, Dr. B. C. Davis, of Carrollton (1st Dist.); Dr. H. Jensen, of Kansas City (2nd Dist.); and Dr. J. T. Jenneman, of St. Louis (3rd Dist.)

The 1924 meeting will be held in Excelsior Springs.

FRED C. CATER, *Secretary-Treasurer.*

OKLAHOMA STATE VETERINARY MEDICAL ASSOCIATION

The annual meeting of the Oklahoma State Veterinary Medical Association was held at Medicine Park, Okla., July 9-10, 1923. The meeting was called to order at 10:00 a. m. by President F. F. Meads, with about 50 veterinarians present, many of whom were accompanied by their families.

The address of welcome, by Hon. Jno. C. Kinard, mayor of Lawton, and the warm hospitality shown by his remarks, demonstrated the appreciation of Lawton by the Association having selected Medicine Park as their meeting place. The response to the address, by Dr. E. V. Robnett, State Veterinarian of Oklahoma, fittingly expressed the appreciation of the hearty welcome extended the Association by the members and visitors present.

President Mead's address dealt forcibly with the problems which confront the veterinary profession, through the shortage of veterinary students attending our colleges. Papers offered by Major Wilfred J. Stokes, on "Mallein Testing," and Dr. J. S. Groves, on "The Packers' Stockyards Administration Act," were very interesting and instructive and were well discussed.

The round-table talk, conducted by Dr. R. C. Moore, considered problems confronting the country regarding veterinary education, the veterinarian as a dispenser of drugs and other veterinary remedies, and the use of local anesthetics in equine surgery, all of which were well discussed.

By resolution a hearty vote of thanks was extended Hon. Jno. C. Kinard, mayor of Lawton, and the management of

Medicine Park, for the many favors and privileges extended to the Association, and to Dr. Geo. Pugh for the splendid work done as chairman of the local committee on arrangements.

A round-table talk conducted by Dr. Allen, on "Tuberculosis Eradication and Accredited Herd Work and Indemnity and Appraisements," occupied a large part of a session, with due interest, and was very instructive.

The holding of this meeting at a summer resort in the Wichita Mountains was to some extent an experiment, but proved to be so satisfactory that the Association decided to change the annual meeting to the winter session, when all business will be taken care of, so as to leave the summer meeting free for a general conference of veterinarians who might be induced to participate and spend an entire week in discussing veterinary subjects a small portion of each day and devote the remainder of the time to pleasure.

Medicine Park is a beautiful summer resort and playground on Medicine Creek, in the Wichita Mountains, in Southern Oklahoma, with splendid bathing facilities in pure running water, plenty of mountain scenery, with an abundance of good fishing. A Government Preserve of 16,000 acres for wild animals is near by, well stocked with buffalo, deer, elk, wild turkeys and other game, all of which will furnish an abundance of recreation for a week or more.

The Lawton Waterworks Dam, across the river, sixty feet high between two mountains, creates a large lake, more than sixty feet deep, of pure spring water which abounds in fish. The Park is five miles from Fort Sill, one of our Government's permanent military camps.

This conference will be under the management of the Oklahoma State Veterinary Medical Association, and will be open to the veterinarians and their families from all parts of the country. As it will be made an annual affair, it is hoped many from other states, as well as Oklahoma, will take advantage of this opportunity to spend their annual vacations in this way and at the same time cultivate the acquaintance of their neighboring veterinarians.

Hotel accommodations are good and rates reasonable, with plenty of detached cottages for rent at very reasonable rates and free camping grounds in abundance. The Park Management did everything they could to make our stay pleasant.

The experimental meeting was a success and all are looking forward to a grand reunion of veterinarians next summer. Make your plans now to be there.

The present officers were continued in service until the winter meeting in Oklahoma City.

R. C. MOORE.

NORTHWESTERN PENNSYLVANIA VETERINARY MEDICAL ASSOCIATION

The regular quarterly meeting of the Northwestern Pennsylvania Veterinary Medical Association was held on July 10, 1923, at Conneaut Lake, Pa. After enjoying an excellent dinner, which was served at the hotel, the members met at the opera house.

Drs. H. R. Church and W. S. Gimper of Harrisburg, Pa., and Dr. G. A. Dick, of Philadelphia, addressed the meeting. Following these addresses each member asked a question, which was thoroughly discussed by all present. After the literary program a clinic was held at the fair grounds.

VIRGINIA VETERINARY MEDICAL ASSOCIATION

The 29th semi-annual meeting of the Association was held at Ocean View, Virginia, July 12-13, 1923. The meeting was called to order by President E. J. Will, promptly at 10 o'clock on Thursday. After the reading and approval of the minutes of the last meeting, the reports of committees were called for. The only report was from the Auditing Committee which reported the books correct and a nice balance in the treasury. The program called for *papers*. There were none presented.

This Association is perhaps fortunate in having a number of men who can present their subjects *ex tempore*. The first talk was by Dr. P. M. Graves, of Culpepper, on "Anthrax in Cattle." Dr. Graves has had a large experience with this disease and gave a very interesting account of the results of his control work during the last few years. It is regrettable that this talk could not be reproduced. The discussion was spirited and stressed the great importance of careful and rigid sanitary methods. Dr. J. G. Ferneyhough, State Veterinarian, urged the importance of proper destruction of diseased carcasses and care in differential diagnosis.

Dr. R. M. Staley, of Philadelphia, gave us a very interesting and instructive talk on "Rabies and the Various Methods of Treatment." It is greatly regretted that this talk had not been written.

Adjournment was then taken until Friday, in order that all could enjoy the bathing and spend a pleasant social evening. The Association was called to order at 10 o'clock Friday morning and the President announced the appointment of five members of the Board of Censors in accordance with the by-laws: Drs. J. A. Turlington, of Wachapreague; B. W. White, of Emporia; W. G. Chrisman, of Blackburg; P. J. Landis, of Weyer's Cove; and J. T. Wilson, of Hampton.

The first talk was by Dr. W. G. Chrisman, of Blacksburg, on "Mammitis in the Cow." Dr. Chrisman gave us the result of his experience in a number of cases and gave us a very excellent extemporaneous address. This was followed by a very full discussion.

Dr. R. E. Brookbank, of the Federal B. A. I., gave a very full account of the work of tuberculin testing and discussed the relation of the practitioner to the accredited-herd testing. This brought the meeting to a close. Except for the fact that there can be no record of the various talks that were made, the meeting was one of our most successful. Thirty-five members were present and everyone enjoyed himself to the full. The next meeting will be the thirtieth (30th) annual meeting and will be held at Murphy's Hotel, Richmond, Virginia, the second Thursday and Friday in January, 1924.

GEO. C. FAVILLE, *Secretary.*

NORTH DAKOTA VETERINARY MEDICAL ASSOCIATION

The 22nd annual convention of the North Dakota Veterinary Medical Association was held in Fargo, July 12 and 13. The place of meeting was at the Veterinary Building of the Agricultural College and there was a good attemdance of veterinarians from all parts of the State. Dr. Louis Van Es, of the University of Nebraska, discussed at length the most prevalent diseases of poultry and swine. The address was delivered in an interesting style which is characteristic of the doctor's discussions and the important points in connection with the symptomatology, pathology and therapeutics of these particular disease conditions were set forth in a clear, systematic manner.

Dr. Van Es stated that the matter of hygiene was of prime importance in connection with the swine and poultry raising industries. The fact was emphasized that the present-day veterinarian must take his place as an advisor to his clients and by virtue of his knowledge of the laws of sanitation recommend measures for the elimination of those factors suitable for the development of disease conditions. He must discard the old conception of what constitutes veterinary service, which is the treatment of diseased individuals rather than protective measures guarding the health of numbers of healthy individuals. These protective measures consist of advice relative to sanitary measures and the practitioner must set a scale of charges for this advice in the same manner as he charges for any other professional service and must not feel that it is necessary to leave medicines and operated animals at each and every stop along the pathway of his professional life.

Dr. Van Es is one of the charter members of the North Dakota Veterinary Medical Association and his presence at this meeting afforded great pleasure to all of the members who welcomed him as one whose past work in North Dakota has proved of the greatest value in the building up of the profession in this state.

Dr. W. J. Butler, State Veterinarian of Montana, addressed the Association upon the subject of external animal parasites and the methods for their control. His talk was full of practical suggestions and he demonstrated the preparation of the crude-oil-emulsion dip which has proved vastly superior to the old method of dipping with crude oil. The Doctor strongly recommended the lime-sulphur and the crude-oil-emulsion dips in all types of mange conditions, with the exception, of course, that the crude-oil dip must not be used for sheep, as the wool is injured.

Dr. L. M. Roderick, of the Agricultural College, took up the problem of spoiled sweet clover hay and its effects upon animals. This is a research problem which is as yet unsolved and the purpose of the address was to bring the condition to the attention of the practitioners so that difficulty would not be experienced in the diagnosis of the condition.

Dr. W. F. Crewe, State Veterinarian of North Dakota, discussed the matter of recent legislation and recently proposed legislation pertaining to the use of anti-hog cholera serum and hog cholera virus. This matter is not so important in North Dakota at the present time, but with the advent of more extensive

hog raising it will undoubtedly prove to be just as red hot an issue as it has been in other states. The danger to the interests of all members of the veterinary profession created by the operations of the professional grafter was the motive for this discussion and it is certainly a wise policy to anticipate the danger of radical legislation and prepare for it in good time.

The business meeting which followed the regular program and which terminated the session resulted in the election of Dr. A. F. Elliott, of Milton, as President for the year 1924; Dr. J. V. Miles, of Ellendale, Vice-President; Dr. R. S. Amadon, of the Agricultural College, Secretary; and Dr. B. C. Taylor, of Hillsboro, Treasurer.

With the weather conditions the best they have been in years for the time of season and the near proximity of the Fair Grounds, where the Inter-State Fair was in progress, it is needleess to state that all members in attendance at the meeting expressed themselves as greatly enjoying their visit.

R. S. AMADON, *Secretary.*

TEXAS SHORT COURSE FOR GRADUATE VETERINARIANS

The faculty of the School of Veterinary Medicine of the A. & M. College of Texas conducted a short course for graduates at College Station from July 16 to 21 inclusive. This is the first short course for graduate veterinarians that has been held in the state of Texas and it was a success. The veterinary profession was well represented at this short course. Veterinarians in attendance included Major Mitchell and Lieut. Dildine, army veterinarians from Fort Sam Houston; Dr. H. Singleton, of the Bureau of Animal Industry, from Houston; Dr. L. H. Baker, of the Western Weighing and Inspection Bureau, of Houston; and twenty-five representative practitioners from various sections of the State.

The schedule was well arranged and included lectures on the principal infective diseases, as well as lectures and demonstrations on nutritional disorders, losses from poisonous plants and splendid discourses on feeds and feeding of all farm animals. Various serological tests and proper methods for conducting autopsies were demonstrated and brief periods were devoted to the exhibits of pure-bred horses, cattle and swine. Perhaps the most popular part of the program was the clinic, which included well selected surgical and diagnostic cases.

"Diseases of Swine" was handled by Dr. A. T. Kinsley, of Kansas City, Mo., in five lectures, one each day. The subject of "Poultry Diseases" was covered by Dr. R. C. Dunn, in two lectures. Dr. S. N. Blackberg disposed of "Poisonous Plants" and "Nutritional Diseases." Dr. Hubert Schmidt lectured on "Anthrax" and " 'Down in the Back' of Cattle." Canine practice was given considerable attention, the subjects of "Rabies" and "Sore Mouth" being presented by Dr. A. A. Lenert, and "Distemper," "Hookworm Disease" and " 'Running Wild' of Dogs," being covered by Dr. R. P. Marsteller. Dr. E. W. Price spoke on "The Preparation of Specimens for Laboratory Diagnosis."

This course was a success because of the untiring efforts of the veterinary staff of the Texas A. & M. College, and particularly should Dr. R. P. Marsteller be commended for his special attention to every detail in conducting the course and for the comfort and pleasure of the attending veterinarians. One evening was devoted to a demonstration and discourse on "The History of the Horse," by Dr. M. Francis, who is probably the best authority on this subject in America.

Pleasures such as watermelon feasts and a barbecue were intermingled with the intensive course that had been provided.

It was unanimously agreed by those in attendance that the veterinary short course was a success and the veterinary faculty was requested to repeat such a course annually for the benefit of the profession of Texas.

A. T. K.

MINNESOTA STATE VETERINARY MEDICAL ASSOCIATION

A Short Course for Veterinarians, offered jointly by the University of Minnesota and the Minnesota State Veterinary Medical Association, at its twenty-fifth semi-annual meeting, was held at University Farm, St. Paul, July 18-19, 1923. About one hundred and fifty veterinarians attended the sessions and they forcefully expressed their interest in every class-hour conducted.

The horse received a prominent place throughout the period. Dr. H. E. Bemis, of Iowa State College, very ably discussed the diseases of the teeth and fortified his statements by reports of careful clinical studies on a number of cases admitted to the hospital. He also presented kaleidoscopic views of the horses entered in the recent saddle-horse endurance tests and told of

the various pathologic developments observed as a result of these trials. The well known horseman, Mr. Wayne Dinsmore, held the audience spellbound while telling of the "Utilization of Horse Power."

"The Horse Situation from the Breeder's Standpoint," by Mr. W. S. Corsa, of the Gregory Farm, Whitehall, Ill., was exceedingly interesting and well received. Performance is always a delight and for this the veterinarians were entertained by the Twin City Driving Club, with a matinee driving card at Hamline track, State Fair Grounds. Dr. M. R. Higbee, of Albert Lea, a practitioner and member of the club, introduced Mr. Ryan, the man who owned and sold the highest priced horse from Minnesota. Dr. E. W. Berg exhibited his five-gaited horse and also rode a fast runner which won his race.

Much interest was displayed in the paper and demonstrations on "Caponizing," by Dr. John Patterson, of Hedrick, Iowa. Dr. L. Van Es, of the University of Nebraska, presented a clear and vivid discussion of certain clinical and pathological syndromes of "Swine Diseases." He stressed the idea of a necropsy, before making a diagnosis or beginning treatment in a drove of swine.

Dr. W. L. Boyd, of the University of Minnesota, presented an interesting paper covering the results of an investigation on the changes in the reproductive organs of the cow following parturition. A paper on "The Clinical Phenomena Following Overloading of the Rumen with Green or Soft Corn." was presented by Dr. W. L. West, of Waseca, and "The Treatment of Stricture and Atresia of the Teat," by Dr. D. E. Bleecker, of West Concord.

The meeting was marked by the fact that the material presented was not all theory. Instead, the members were kept busy observing and practicing practical problems. Dr. W. E. Fretz, of the Bureau of Animal Industry, demonstrated his new needle-guard for intradermal tuberculin injection. Dr. C. P. Fitch demonstrated methods for securing blood from cattle for making biological tests for abortion disease. The tuberculin test of chickens was demonstrated by Dr. R. E. Lubbehusen. Drs. Boyd and Bemis performed several major surgical operations on cattle and horses.

A banquet was enjoyed by the members on the evening of the first day, which was presided over by Dean W.C. Coffey, of the

Department of Agriculture of the University of Minnesota. About thirty of the wives and children were entertained by the Association through the local committee.

H. C. H. KERNKAMP.

WEST VIRGINIA STATE VETERINARY ASSOCIATION

The annual meeting of the West Virginia State Veterinary Association was held at the Elks Building, Wheeling, W. Va., July 10-11, 1923, with a large attendance of members. The State Veterinary Examining Board, with its new Secretary, Dr. O. C. Bradley of Fairview, W. Va., who succeeded S. W. Langford, of Keyser, W. Va., held its session on the first day of the meeting. The second day was taken up with the reading of papers and discussions and a very interesting session developed.

MISSOURI VALLEY VETERINARY ASSOCIATION

The thirtieth annual meeting of the Missouri Valley Veterinary Association convened at the Hotel Rome, Omaha, Nebraska, July 23, 1923, with President H. B. Treman, of Rockwell City, Iowa, in the chair. President Treman's opening address covered many topics of timely interest and importance to the veterinarians in the Missouri Valley.

The literary program was opened with a paper by Dr. F. Perrin, of Lincoln, Neb., entitled "Treatment of Fractures in Small Animals." Dr. Perrin stated that, due to the advent of the automobile, dogs were more frequently injured than formerly and that very few dogs come out of an automobile accident without a fracture. He rather inclined to the use of fish glue as the most suitable material for casts, having certain advantages over plaster of paris, starch and silicate of soda. An animated discussion followed, led by Dr. J. C. Flynn, of Kansas City, Mo., who related some experiences with fractures of the jaw. Doctors J. I. Gibson, A. Trickett and R. C. Moore also took part in this discussion.

An illustrated lecture, entitled "Surgical Treatment of Infected Wounds of the Navicular Bursa of the Horse" was given by Dr. R. C. Moore, of St. Joseph, Mo. This was a splendid presentation of the subject and Dr. Moore brought out the point that the great majority of horses suffering from the condition could now be saved through operative interference, where such cases used to be regarded as hopeless.

The afternoon session was opened with an address by Dr. H. Preston Hoskins, Secretary-Editor of the A. V. M. A. Secretary Steel had assigned him the subject "What the American Veterinary Medical Association Can Do for the Practitioner." Dr. Hoskins did not confine himself strictly to this particular subject, but lead up to it by relating some recent history and outlining in a general way some of the things which it was hoped would be accomplished through the amalgamation of the offices of Secretary and Editor. Dr. Hoskins touched upon the progress being made by the Committee on Policy and indicated briefly some of the recommendations which would probably be made to the Association at Montreal, in the report of the Policy Committee. Many of these recommendations were designed with the distinct intention of improving conditions for the men in active practice. The discussion was led by ex-President A. T. Kinsley, who brought out several points which had not been covered by Dr. Hoskins.

In the absence of Dr. L. Van Es, his subject, "The Control of Swine Diseases by Use of Sanitation" was presented by Dr. H. M. Martin, of the University of Nebraska. The paper was thoroughly discussed, particularly in relation to the subject of disinfecting hog lots contaminated with ascarid ova. Dr. Martin emphasized the resistant powers of these ova and outlined what appeared to be the most rational system for preventing re-infestations.

Dr. N. S. Mayo, of Chicago, Ill., was unable to be present on account of his having been called to Camp Custer for military duty. He had forwarded his paper, however, which was read by the Secretary. It dealt with anthelmintics in swine, and was in the form of a preliminary report on the use of several new anthelmintics for the eradication of ascarids in swine.

"The Dispensing of Hog Mineral Mixtures by the Practitioner" was very ably presented by Dr. P. L. Cady, of Arlington, Nebr. Dr. Cady went thoroughly into the subject of mineral requirements for hogs and his paper was followed by a very spirited discussion, which led into the subject of deficiency diseases, vitamins, etc.

Dr. B. H. Brooks, of Riverton, Iowa, presented "Therapeutic Notes." He related his experiences with various methods of medical treatment in handling a number of diseases commonly met by the veterinarian.

Monday evening the visiting veterinarians were escorted to the Ak-Sar-Ben entertainment. Those who have witnessed

performances by the Knights of Ak-Sar-Ben in previous years do not have to be told what a splendid entertainment is provided by this unique organization. If anything, the performance this year was even better than on previous occasions.

The Tuesday morning session was opened by Dr. R. S. Walden, of Lennox, South Dakota, who presented the subject of "Sanitary Methods in the Handling of an Outbreak of Anthrax." Dr. Walden explained his so-called "piano-box" method for the fumigation of the clothes worn by those who had to attend animals on anthrax-infected premises. He favored kreso dip as the best disinfectant for his part of the country, on account of its miscibility with the hard water in those parts. He is also a firm believer in lime and advocates the burying of carcasses under lime when burning is not possible. One of the best discussions of the meeting followed Dr. Walden's paper. The points which were most prominently touched upon were the clinical diagnosis of anthrax, the selection of tissues for laboratory diagnosis, the disposition of carcasses and the disinfection of the premises.

Dr. R. S. Foulk, of Holton, Kansas, presented a paper entitled "Sanitary Methods to be Used in the Control of Contagious Abortion of Cattle." Dr. Foulk stressed the importance of preventing the contamination of the feed and water supply, as he believed that most infections took place by way of the alimentary tract. He is a firm believer in the use of bacterins and his rather positive statement on this point was the signal for a rather spirited discussion relative to the value of biological products for the control of infectious abortion. The discussion extended into the field of porcine abortion in its relation to the bovine disease.

Dr. G. H. Mydland, of Horton, Kansas, read a splendid paper entitled "Diagnostic Symptoms and Differential Treatment of Various Forms of Colic in the Horse." This paper will be published in the JOURNAL. A splendid discussion followed, centering around the significance of vomiting in the horse and its relation to rupture of the stomach.

Dr. G. P. Statter, of Sioux City, Iowa, addressed the meeting on the subject of "Milk and Meat Inspection in Missouri Valley States, with Special Reference to Small Towns." This was followed by a very good discussion. Those who took part included Dr. J. H. McLeod, of Charles City, Iowa, with a population of 7,000; Dr. G. H. Mydland, of Horton, Kansas, with a population of 4,500; and Dr. J. S. Barbee, of Kansas City, Mo., with a

population of 350,000. Dr. J. I. Gibson very heatedly deplored the desecration of the milk bottle, in calling attention to some of the uses to which milk bottles are sometimes put.

One of the most important papers on the program was presented by Dr. J. A. Kiernan, Chief of the Tuberculosis Eradication Division of the Bureau of Animal Industry. His address was entitled "The Future Place of the Accredited Veterinarian in the Accredited-Herd Plan." This very timely and important paper is being published in this issue of the JOURNAL.

Dr. Kiernan was followed by Professor H. R. Smith, of the National Live Stock Exchange, who spoke on the marketing of live stock from a tuberculosis-free county. Professor Smith brought out that a sum of approximately ten million dollars is now available for fighting bovine tuberculosis; that there are 450 men devoting their entire time to this work and that results are being obtained, as is indicated by the fact that the amount of tuberculosis in cattle has been reduced from 2.6 per cent in 1916 to 2 per cent in 1922.

The percentage of tuberculosis in hogs still runs high, the average for the United States being 14.3 per cent. The packer figures on this loss in doing business and it goes into the overhead. This is why the packer is only too glad to pay a premium of ten cents per hundred pounds on live hogs coming from a tuberculosis-free county. Professor Smith emphasized the fact that this is a cold business proposition and not philanthropy in any sense. He figured that it means approximately $17.00 per car and a premium of something like $20,000 per year for a state like Iowa. Professor Smith announced that seven counties in North Carolina and four counties in Michigan had been approved the day before, July 23rd, and that two hundred additional counties throughout the country were working on the project.

Mr. E. M. Boddington, attorney for the Associated Serum Producers, was present, having just returned from a trip to Europe. He related some of his experiences in several European countries, especially in France and Itlay. Those who heard Mr. Boddington listened to a real treat and will undoubtedly never forget his description of conditions and practices in the countries he had so recently visited. It is safe to say that not a single one of his hearers had very much of a desire to go to Europe right away, after Mr. Boddington had finished.

A business session concluded the day's program. Secretary Steel presented his annual report, and Dr. B. W. Conrad reported

briefly for the Defense Committee. Several proposed amendments to the constitution and by-laws were presented. These will be acted upon at the next regular meeting of the Association. The most important amendment is one which provides for holding but one meeting annually, this meeting to be held during the summer. The amendment also provides that in case the American Veterinary Medical Association meets at any point in Iowa, Nebraska, Kansas or Missouri there shall be no meeting of the Missouri Valley Veterinary Association that year, but that the Board of Trustees shall hold a meeting at the time and place of the A. V. M. A. meeting for the transaction of necessary business. It is believed that this change will remove all of the objections which have been raised to the continued existence of the Association as interfering with the various state associations in the Missouri Valley.

DR. G. P. STATTER
President of The Missouri Valley Veterinary Association

The election of officers resulted as follows: President, Dr. G. P. Statter, of Sioux City, Iowa; Vice-President, Dr. R. S. Walden, of Lennox, So. Dak.; Secretary-Treasurer, Dr. E. R. Steel, of Grundy Center, Iowa; Trustees, Dr. H. B. Treman, of Rockwell

City, Ia.; Dr. P. L. Cady, of Arlington, Nebr.; Dr. Homer A. Wilson, of Jefferson City, Mo.; Dr. R. S. Foulk, of Holton, Kans.; Dr. J. I. Gibson (member-at-large), of St. Joseph, Mo.

Wednesday was set aside for an all-day clinic in the Sales Pavilion in the Stock Yards. Dr. A. T. Kinsley demonstrated the post-mortem lesions of various diseases in pigs, these having been prepared and selected to show the following conditions: Acute cholera, chronic cholera, parasitic invasions, ulcerative and diffuse necrotic enteritis, erysipelas, intrauterine infections, salt poisoning, lye poisoning, hemorrhagic septicemia and other conditions met in the field of swine practice.

Dr. H. B. Raffensperger, of the B. A. I., Chicago, Illinois, demonstrated the lesions in the lungs of pigs caused by the larvae of the ascaris, as well as the larvae themselves in the lung tissue, with the aid of the microscope.

Other demonstrations included the passing of the stomach-tube in pigs, by Dr. P. C. Molgard, of Eldora, Iowa; the castration of the cat in the standing position, by Dr. J. C. Flynn, of Kansas City, Mo., the intradermic tuberculin test, by Dr. C. A. Jerome, of Omaha, Nebr.; with examinations of the reactors.

Dr. C. E. Ackerman, of St. Joseph, Mo., brought out some very good points in the treatment of chickens with drugs and demonstrated the administration of various forms of drugs to poultry.

The comment everywhere was that the meeting was highly successful and very encouraging, considering the difficulties that the Association has been facing. The attendance was approximately 300. Many veterinarians arrived for the clinic, who were unable to attend the other two days, on account of being busy vaccinating.

E. R. Steel, *Sec.-Treas.*

SOUTH CAROLINA ASSOCIATION OF VETERINARIANS

The fourteenth annual meeting of the South Carolina Association of Veterinarians was held at Chester, S. C., on July 23-24, 1923, with a large number of veterinarians present. The large attendance showed the interest taken in the profession and the feeling of good fellowship existing between the members.

The address of welcome was delivered by Mr. Caldwell, president of the Tri-County Guernsey Association. Dr. W. A. Barnette, of Greenwood, responded to the welcome.

The papers presented the first day included: "Rumination in the Ox," by Dr. J. H. Yarborough, of Lowryville; "Notes from My Canine Practice," by Dr. Pascal C. McClain, of Gastonia, N. C.; "The Common Ante- and Post-Mortem Conditions of the Cow Due to Foreign Bodies," by Dr. M. R. Blackstock, of Spartanburg.

On the second day of the meeting the following papers were read: "Some Important Parasites and Their Control," by Dr. J. H. Rietz, of Columbia; "Bovine Sterility," by Dr. W. A. Barnette, of Greenwood; "Veterinary Jurisprudence," by Dr. Benj. McInnes, of Charleston; "Fright Disease in Dogs," by Dr. J. T. Dixon, of Rock Hill.

All papers were thoroughly discussed and all reported a very good time. Sumpter was selected for the next summer meeting. The winter meeting will be held in Columbia.

An automobile trip to Mr. Caldwell's dairy, following the business session, was much enjoyed.

M. R. Blackstock, *Secretary.*

KENTUCKY VETERINARY MEDICAL ASSOCIATION

The summer meeting of the Kentucky Veterinary Medical Association was called to order by the President, Dr. H. Gieskemeyer, at the Lebanon Chautauqua Grounds, July 25-26, 1923. This was indeed an ideal place to hold an out-door summer meeting. The building was an open-air affair, surrounded on all sides by immense shade trees, making it a most comfortable place. After a few remarks by the President, Hon. C. C. Boldrick was introduced. He welcomed the Association to Lebanon, as only the true Kentuckian can. In response Dr. M. H. Doller thanked him and assured him that we would partake of all the kind invitations extended us.

Mr. H. J. Childress, county agent, then addressed us on "The Relations of the County Agent and the Veterinarian." He stated that in the beginning the county agent used serum and virus in self-defense, on account of there being so few graduate veterinarians. He also stated that he thought that the county agent was more capable of using virus than the uneducated "horse doctor," but now that we had qualified veterinarians in most counties, there was no occasion for the county agent to work in this field, but that the work of county agents should be along the lines of agriculture and the selection of better sires. He stated

that when the county agent found out what his job is, the cooperation between the agent and the veterinarian would be one hundred per cent.

President H. Gieskemeyer read a very interesting paper on "Honesty of Purpose." and suggested various plans to carry on the good work at the meetings. Dr. A. J. Kay gave a very interesting case report concerning a fracture of the rim of the acetabulum in a valuable bull. Dr. T. P. Polk's paper on "Veterinary Extension Work in Kentucky," was very interesting. He stressed the importance of cooperation of county agent and veterinarian. Dr. J. H. Luallen read a very interesting paper on an outbreak of a disease in cattle that occurred in his county and this brought forth considerable discussion.

Dr. W. H. Simmons, State Veterinarian, read a paper on "Prevalence of Animal Diseases in Kentucky." He stated that the most important were contagious abortion, bovine tuberculosis, blackleg, hemorrhagic septicemia, hog cholera, sheep scab and necrobacillosis. He stated that great progress had been made in the eradication of bovine tuberculosis and hog cholera. He stated that sheep troubles were his greatest concern at present. but felt sure that this trouble would be removed in a very short time.

The first paper after luncheon was read by Dr. Elmer Lash, of Washington, D. C., representing the U. S. B. A. I. on "The New Policy Regarding the Appraisals of Tuberculin Reactors," and was discussed by Dr. Wm. F. Biles, Inspector in Charge for the B. A. I. in Kentucky.

In the absence of Dr. A. J. Steiner, of the University of Kentucky, his paper on "Animal Parasites" was read by Dr. W. W. Dimock. It was discussed as follows: Dr. L. H. Middaugh, on swine parasites; Dr. A. J. Kay, on sheep parasites; Dr. A. S. Barnes, on horse parasites; Dr. H. Gieskemeyer, on dog parasites. These papers were followed by a general discussion, following which the meeting was adjourned.

We returned to the hotel, where a banquet was served at 8 p. m., the business men of Lebanon acting as hosts. A real good time was enjoyed, the high lights being the playing of the Negro Jug Band, of Louisville; the keen wit of Mr. O. D. Thomas, toastmaster, and the piano playing of Dr. "Billy" Hickman. This was followed by an illustrated lecture by Drs. T. P. Polk and D. Smith.

For the Thursday morning session the first subject on the program was "Abortion and Sterility," by Dr. W. W. Dimock, with discussion by Drs. William Coffee and C. E. Palmer.

A business session was then held. Following the report of the Secretary, Dr. D. E. Westmoreland read a paper "Legislation, Past and Future." He gave a brief outline of the veterinary profession in Kentucky and suggested various means to further the interests of the graduate veterinarian in this state.

A committee was appointed to establish a minimum charge for the tuberculin testing of cattle and instructed to report back at the next meeting. A committee was appointed to arrange for the publication of a bulletin, to be issued yearly to the members of the Association.

At the clinics which followed, the following operations were performed: ridgling operations on the horse, by Drs. Robert Fisher and Wm. Coffee; castration of ruptured boar, by Dr. J. H. Luallen; peroneal tenotomy, by Dr. F. H. Reister; spaying operation in the bitch, and many others. The clinic was the largest held by this Association.

Hopkinsville was selected for the next meeting, to be held on Feb. 6-7, 1924. This brought another Kentucky meeting to a close with the same large attendance and good fellowship predominating.

J. A. WINKLER, *Secretary-Treasurer.*

TENNESSEE VETERINARY MEDICAL ASSOCIATION

The annual meeting of the Tennessee Veterinary Medical Association convened at the Hermitage Hotel, Nashville, Tennessee, July 26-27, 1923. President Woods, of Murfreesboro, presided. The morning session consisted of an address of welcome by Mayor Hilary Howse, to which Dr. E. I. Smith, of Nashville, responded. Following this, a short business session was held and the election of officers resulted as follows: Dr. W. B. Lincoln, of Nashville, President; Dr. A. C. Topmiller, of Murfreesboro, First Vice-President; Dr. A. E. Robertson, of Nashville, Second Vice-President; Dr. L. G. Brown, of Franklin, Secretary, and Dr. W. M. Giles, of Franklin, Treasurer.

The afternoon session consisted of discussions on hog cholera and epilepsy in dogs. Dr. J. P. O'Connor, of the Bureau of Animal Industry, opened the subject of hog cholera in which a number of members participated. Dr. M. Jacob, of Knoxville,

read a short paper on a mysterious nervous disease in dogs and spoke extemporaneously regarding his experiences. The last on the afternoon program were two reels, "The Horse in Motion" and "Roads to Wonderland," from the Bureau of Animal Industry, furnished by the local Bureau force. The former reel proved to be a most instructive one and was very favorably commented upon by the majority present. The latter reel was entertaining in that it revealed some very picturesque mountain scenery in the West.

At night supper was served in a romantic manner under the soft lights of Japanese lanterns at Cumberland Park on the bank of the Cascade Plunge. A few of the plump and not-so-plump members ventured into the water, all of which helped to entertain those who were too timid to don a bathing suit.

On Friday, in the forenoon, a very interesting clinic was provided by Dr. George R. White, of Nashville. Dr. White showed himself to be a very skillful and easy operator. Among the operations which he performed was etherizing and deodorizing a skunk. This operation was performed under glass and the audience was inclined to keep a safe distance until the glands were removed. The air was heavy with the characteristic odor, which is easily recognized. Dr. White exhibited a young skunk which showed the wounds rapidly healing in about ten days after an operation. These animals will be kept as pets and the owners claim that they are harmless and very interesting.

A number of one-pound chickens were available and Dr. White cleverly demonstrated the simple method of caponizing. This attracted considerable attention inasmuch as the capons make such remarkable growth and produce a meat which is exceedingly desirable.

Dr. O'Connor demonstrated in a very skillful manner how to hold a post-mortem on a cholera hog. The lesions were made plain to all the spectators and the demonstration was pronounced the best they had ever seen.

This closed the program and everyone went away happy. It was decided to hold the next meeting a year hence at Chattanooga, Tennessee, and it is sincerely hoped that every member will attend and bring his wife, as the presence of the ladies always lends an air of refinement to every gathering.

L. G. Brown, *Secretary.*

NORTHWESTERN OHIO VETERINARY MEDICAL ASSOCIATION

The semi-annual meeting of the Northwestern Ohio Veterinary Medical Association was held at Russell's Point, Ohio, August 1-2, 1923, with about ninety in attendance.

The first day the morning session was devoted to business. At noon a banquet was served in the "Hotel Dining Room Beautiful." A glance at the menu will explain why any slow cases of impaction may have followed, even though no cases of acute indigestion were reported.

MENU

Cream of Tomato Soup

Salted Wafers Croutons

Fried Spring Chicken, a la Maryland

Sliced Tomatoes Queen Olives

Sweet Pickles Celery Hearts

New Potatoes in Cream Scalloped Corn

Iceberg Head Lettuce

Thousand Island Dressing

Fruit Salad Chilled Canteloupe

Patriotic Ice Cream Delia's Chocolate Cake

Mother's Famous Cherry Pie

Assorted Cakes

Coffee Iced Tea Milk

Salted Almonds After Dinner Mints

In the afternoon those present indulged in a very fine literary feast, consisting of the following papers: Dr. Alvin Broerman, "The Common Diseases of Poultry and the Treatment;" Dr. F. A. Zimmer, "Relation of State Service to the Practitioner;" Dr. P. T. Engard, "Why the Necessity of a Practice Law?"; Dr. Harry T. Moss, "Some Observations in Small Animal Practice;" Dr. R. R. Shaw, "Feeds and Feeding Brood Sows;" and Dr. W. F. Wise, "A Veterinarian and His County Fair."

Dr. E. V. Hover substituted for Dr. E. S. Augsburger, who was unable to present his paper, "Some Diseases Affecting Swine other than Cholera." Dr. Paul Vaughn presented "Interesting Subjects."

The Association unanimously passed a resolution endorsing the plans for bovine tuberculosis eradication in Ohio, as formulated by the Federal and State Departments.

C. A. FAST, *Secretary-Treasurer*

NORTH CENTRAL OHIO VETERINARY MEDICAL ASSOCIATION

The third triennial meeting of the North Central Ohio Veterinary Medical Association was held at the hospital of Drs. Case and Planz, Akron, Ohio, July 26, 1923.

The meeting opened with a cattle clinic at the farm of Mr. W. E. Wright, on the Medina road, four miles west of Akron. Mr. Wright is said to have the finest and highest producing herd of Guernseys in Ohio.

In the afternoon a horse, dog and chicken clinic was held at the hospital. Then a trip was made to the Ohio Stock Food Farm, where a clinic was conducted by Dr. Frame. There are 3500 hogs on this farm, feed on garbage from the city of Akron. Dr. Frame explained how to keep hogs well, while being fed on garbage. Dr. Case performed a covered operation, for scrotal hernia, on a pig. Later the members went to the Anna Dean Farm, where the Telling-Belle Vernon Dairy is located. Here Dr. C. W. Eddy conducted a sterility clinic, assisted by Dr. Case. A post-mortem was held on a reactor, followed by a good discussson.

On the return to Akron the members stopped at Young's Hotel, where a fish dinner was served and a business meeting conducted. An evening clinic was held at the hospital.

The meeting as a whole was booth entertaining and instructive, and greatly enjoyed by all who attended.

The ladies were entertained by Mrs. C. H. Case.

C. C. WADSWORTH, *Secretary.*

BRITISH COLUMBIA, WASHINGTON AND OREGON VETERINARY MEDICAL ASSOCIATIONS

The veterinarians of British Columbia, Washington, Oregon and Idaho held their third annual joint meeting in Portland, Oregon, August 2-3-4, 1923. The attendance reached about eighty, many of the members being accompanied by their wives, and a few by their whole families. There was a good representation of the younger members of the profession, which is an encouraging sign. The headquarters were at the Imperial Hotel and the meetings were held in the Chamber of Commerce rooms in the Oregon Building.

The gathering was addressed by Dr. W. G. Morehouse, President of the Oregon State Veterinary Medical Association. A

welcome to the city was extended by His Honor the Mayor. Dr. E. E. Wegner responded in a way that reflected just credit, both on the speaker as well as the profession.

A number of very excellent papers made up the program. Dr. R. E. Hunt, of Roseburg, Oregon, reported on "Salmon Poisoning in Dogs." Dr. E. A. Schmoker, of the Carnation Farms, presented "Sterility in Cattle," illustrated with colored charts. Drs. R. J. Bestul, of Grants Pass, Oregon, H. D. Peterson, of Dallas, Oregon, J. R. Fuller, of Walla Walla, Wash., and J. N. Shaw, of Tillamook, Oregon, reported on a number of interesting cases.

Dr. J. C. Exline, of Olympia, Washington, described the technique of the inspection of sheep for scabies. Dr. E. A. Ehmer, of Seattle, read a paper entitled "Organotherapy." Dr. H. G. Miller, of Corvallis, Oregon, covered the subject "Mineral Matabolism." Dr. J. A. Grau, Bureau of Animal Industry, read a paper entitled "Some Swine Diseases of the Northwest." Dr. W. H. Antles also spoke on this subject.

"Canine Distemper" was presented by Dr. R. A. Button, of Tacoma. Lieutenant J. R. Ludwig, of the Veterinary Corps, located at Vancouver Barracks, Wash., addressed the meeting on "Army Veterinary Service."

Thursday evening was spent at the City Auditorium where a moving picture entertainment was given, under the auspices of the Northwestern Veterinary Association. The pictures included such numbers as "Exit Ascaris," "Out of the Shadows," "The Horse in Motion," etc. The show was open to the general public.

Friday afternoon a clinic was held. In the evening a banquet was given at the Chamber of Commerce, with sixty-eight present. Meetings of the several state associations were held Saturday morning, with a joint session in the afternoon, followed by a tour of inspection.

All veterinarians in the Northwest are looking forward to entertaining the American Veterinary Medical Association in 1925. We are all working together toward that end.

The officers for the Washington State Veterinary Medical Association were elected as follows: Dr. H. A. Trippeer, Walla Walla, President; Dr. R. J. Donohue, Outlook, Vice-President; Dr. Carl Cozier, Bellingham, Secretary-Treasurer.

CARL COZIER, *Secretary-Treasurer,*
Washington State Vet. Med. Asso.

COMMUNICATIONS

SOLUBLE TAR TO REPLACE ARSENIC IN TICK ERADICATION WORK

To the Editor:

Since the first vat for tick eradication was constructed in Hillsborough County, Florida, in 1913, I have been preparing the arsenical concentrate used in charging the vats in Hillsborough County. While my preparation has always been used by government men in charge of tick eradication work in Florida, in preference to all other such preparations, it has never been recognized by the Bureau of Animal Industry.

Commencing with January 1, 1923, and using one vat for experimental purposes, I have used soluble tar in the proportion of one per cent; that is, one gallon of soluble tar to each one hundred gallons of water. I am now charging a number of vats with this preparation and the results are highly satisfactory.

It is absolutely non-poisonous and entirely safe, in any proportion, for animals and man. The effect on the cattle in the cleaning and brightening of the coat and the elimination of the worry of flies for a considerable period after dipping are very noticeable.

I am sending you this communication as I presume there are other professional men who will be as glad to be as free from the dangers of arsenic as I am. I cannot see that it makes any difference to the tick, whether it is poisoned or choked to death.

Fred W. Porter.

Tampa, Florida, July 25, 1923.

VETERINARY EDUCATION

To the Editor:

In a recent number of one of our veterinary journals there appeared an advertisement of the St. Joseph Veterinary College, offering a three-year course of instruction in veterinary medicine, to begin October 8, 1923.

I have before me the catalog of the above advertised course which does not give the names of any officers except the president, nor the names of any members of the faculty. As I have been and am still interested in the St. Joseph Veterinary College,

I think it is but fair to the veterinary profession and to myself to say that no such course has been authorized by the Board of Directors of said college of which I am Secretary at the present time, neither do I approve of such a course in any way.

I, like many others, have thought the present entrance requirements to veterinary colleges too high for the times and conditions of the country, but to permit veterinary colleges to go back to the days when they admitted whom they chose, and conducted a course without restrictions of any kind, and cast on to the profession at this time men whom such institutions would be likely to turn out, is surely not only a step but a long stride backward, the consequences of which should be looked upon very seriously, as it would certainly trend to greatly lower the high standard we have attained.

As one who has spent the best of his life to help reach the present goal and one who loves the profession dearly, I wish to protest against any course of veterinary instruction that does not meet the requirements of the Bureau of Animal Industry of the Department of Agriculture of the greatest country on earth.

R. C. MOORE.

St. Joseph, Mo., August 1, 1923.

ARMY VETERINARY SERVICE

VETERINARY TRAINING AT CAMP CUSTER

The following veterinary officers of the Reserve Corps, were ordered to Camp Custer, Michigan, the middle of July for fifteen days special training: Lt. Col. L. A. Merillat, Lt. Col. N. S. Mayo, Major D. M. Campbell, Capt. James Ash, Lts. Nolechek, Ogilvie and Van Zandt.

The work consisted of practical training in problems that are likely to be encountered under actual field conditions and special training along army veterinary lines. The veterinary work was in charge of Major Burt English, Camp Veterinarian, assisted by Lts. Ewen and Kintner, all of the regular army.

Under war conditions it was estimated that ninety percent of the animal casualties are due to exhaustion and emaciation. The various methods of preventing these conditions were fully presented. The problem of standings for horses under field conditions is another important problem that was studied and in this connection the standings and picket lines at Camp Custer were

carefully inspected and the good and bad features pointed out. The question of feeds and feeding of army animals, under both peace and war conditions, was also considered fully and it was shown how "sand colic," that formerly was a serious problem at Camp Custer, had been entirely prevented.

Other subjects studied were veterinary sanitation and administration, the control of transmissible diseases under war conditions and the inspection of animal food products for the army and grain and forage for the animals. In the "terrain exercises," in which all reserve officers took an active part, the veterinary officers selected the collecting stations for animal casualties and devised the best methods of caring for injured animals.

VETERINARY RESERVE OFFICERS AT CAMP CUSTER

Left to Right—Maj. English, Lt. Ewen, Lt. Kinter, Lt. Col. Merillat, Lt. Col. Mayo, Maj. Campbell, Capt. Ash, Lt. Nolechek, Lt. Ogilvie, Lt. Van Zandt.

Excellent instruction in equitation was given all veterinary officers by Lt. Ewen, who is not only an expert horseman but also an excellent polo player. The whole course of training at Camp Custer was well planned and executed. All reserve officers had only the highest praise for the course that was not only interesting but intensely practical. The regular army officers in charge of the training rendered all assistance possible and the veterinary reserve officers received splendid help from Major English and Lts. Ewen and Kintner.

N. S. M.

THE CONESTOGA VETERINARY CLUB

The Conestoga Veterinary Club held its July meeting out-of-doors. Dr. John W. Adams, Professor of Veterinary Surgery, University of Pennsylvania, demonstrated several operations.

MISCELLANEOUS

NEW REGULATIONS ACCREDIT COUNTIES PRACTICALLY FREE OF CATTLE TUBERCULOSIS

An amendment to the Federal regulations having to do with the eradication of cattle tuberculosis, in which provision is made for classifying certain areas where the disease has been practically eliminated as modified-accredited areas, has just been signed by Acting Secretary of Agriculture Pugsley, and will take effect on and after July 23, 1923. There are now many counties in various states where this cattle plague practically has been eradicated and many others in which the clean-up work has gone very far. As a result of this action by the department these areas will be recognized and will be freed of certain inhibitions which are necessary in other territory. The provisions contained in these new regulations were unanimously adopted by the United States Live Stock Sanitary Association, at its annual meeting last winter, and by representatives of the various cattle breeders' associations.

The regulations will be carried out by the Bureau of Animal Industry in cooperation with the state live stock sanitary authorities. The states will maintain quarantines to protect the designated areas from the introduction of untested animals from other parts of the state or from other states.

Under the amended provisions a county may be designated as a modified-accredited area when a complete test of all the cattle in the area shows less than one-half of one per cent to be reactors, that is affected with tuberculosis. Those few herds in which infected animals were found will be quarantined and can not be retested within less than sixty days from the date of the original test.

Once an area is put into this modified-accredited classification no cattle can be brought in unless from an accredited herd or after having passed a satisfactory tuberculin test, except that under certain conditions cattle may be brought in for slaughter or for feeding and grazing.

When an area is designated by the cooperating state and federal authorities as a modified-accredited area it will remain so classified for three years, providing there is no indication, through animals slaughtered or in other ways, that the percentage of

tuberculosis does not exceed one-half of one per cent, at any time. If it is found that one per cent or more of the cattle in an area are found to react, then all cattle must be retested; if the infection is between one-half of one percent and one per cent, then only the infected herds must be retested, and when their percentage of reactors is reduced below one-half of one per cent the area may be classed as a modified-accredited area.

The first list of counties to be announced by the Chief of the Bureau of Animal Industry as being modified-accredited areas is as follows: Indiana—Dearborn; Michigan—Hillsdale, Charlevoix, Antrim, Emmet; North Carolina—Scotland, Rowan, Pender, New Hanover, Davis, Davidson, Cumberland, Cabarrus, Buncombe, Forsythe; Tennessee—Bradley, Marshall. Tests have shown all these counties to have less than one-half of one per cent of tuberculosis.

DO NOT BE TAKEN IN

We are advised by Dr. S. Crouch, of Klamath Falls, Oregon, that one Dr. B. C. McClintock, who claims, among other things, to be a graduate of the Chicago Veterinary College, class of 1894, is circulating himself throughout California and the Northwest at the expense of the veterinary profession in those parts. He is charged with securing money under false pretenses, according to information at hand, working upon the sympathies of members of the profession, and being somewhat of an expert in high finance, real estate deals, etc. According to our good friend Dr. John L. Tyler, of Huntington Park, California, this imposter has been fined for illegal practice and served time in jail on this account and some others. He appears to be a bad egg.

VISITORS AT THE JOURNAL OFFICE

Among those who called at the JOURNAL office recently are: Dr. J. C. McNeil, Chief Dairy and Food Inspector, of Pittsburgh, Pa.; Dr. H. W. Jakeman, Pitman-Moore Company, Boston, Mass.; Drs. E. P. Schaffter, J. W. Vance, B. C. Smith, Ashley G. Stamp, Hugo Cornehl, Earle F. Sheffield, Harry Lebeson and S. Brenton, all of Detroit.

Since 1914 it is reported the horse population of Russia has decreased by about one-half. The explanation is that approximately 16,000,000 of them have been eaten by the people.

—*Our Dumb Animals.*

NECROLOGY

JAMES GUNION RUTHERFORD

Dr. J. G. Rutherford died July 24, 1923, at Ottawa, after an illness of several months. At the urgent suggestion of his physician, Dr. Rutherford had gone to the Pacific Coast, the past winter, thinking that his condition would be benefited. For a time he seemed to show some improvement. On July 9th, while on tour with the Board of Railway Commissioners, he was taken seriously ill, at Penticton, British Columbia. He was sent to Ottawa, in a private car, and placed in a local hospital. Although the best medical care and attention was given him, he sank rapidly, his long illness having exhausted his reserve powers.

Born at Mountain Cross, Manse, Peebleshire, Scotland, on Christmas Day, 1857, he came to Canada at the age of 17. After studying at the Ontario Agricultural College, at Guelph, he entered the Ontario Veterinary College and graduated, in 1879, as the gold medalist of his class. He practiced at various times and places in Canada, the United States and Mexico. In 1884 he located at Portage la Prairie, Manitoba. He practiced here for many years, and also gave considerable of his time and attention to the breeding of horses. For several years he was President of the Horse Breeders' Association of Manitoba.

Dr. Rutherford's entry into public life really began in 1892, when he was elected to the Manitoba Legislature, to represent the constituency of Portage Plains. In 1896 he was re-elected by acclamation and a year later was elected to the Dominion Parliament to represent the constituency of Macdonald, which at that time comprised over one-sixth of the Province of Manitoba. In 1901 he represented the Dominion Department of Agriculture as Special Quarantine Officer in Great Britain.

In 1902 Dr. Rutherford was appointed Chief Veterinary Inspector for Canada. Two years later he organized the Health of Animals Branch and was made Veterinary Director-General. In 1906 he took over the office of Live Stock Commissioner, in addition to his other duties. A year later he organized the present Meat and Canned Foods Inspection Service. He created the Pathological Division and established the Biological Laboratory at Ottawa.

Dr. Rutherford made two trips to Rome, in 1908, as the Canadian delegate to the International Institute of Agriculture. The same year he represented Canada at the International Tuberculosis Congress, in Washington. In 1910 he was created a Companion of the Distinguished Order of Saint Michael and Saint George, in recognition of his distinguished services to the Dominion and the Empire.

Upon leaving the Government service in 1912, Dr. Rutherford was immediately engaged by the Canadian Pacific Railway, through Lord Shaughnessy, to take charge of the live stock interests and developments of the Northwest. The following year he was appointed superintendent of Agriculture and Animal Industry in the Department of Natural Resources, at Calgary. From 1913 to 1919 he was President of the Western Canada Live Stock Union. In November 1918 he was appointed to the Board of Railway Commissioners, assuming office in February, 1919, and continuing as a member of the Board up to the time of his death.

Dr. Rutherford joined the American Veterinary Medical Association, at the meeting in Minneapolis in 1902. The same year he was elected First Vice-President, and for four successive years he was re-elected a Vice-President. At the Philadelphia meeting, in 1908, he was elected President. He was a member of the Execuitve Committee, from 1902 until 1909, and during the years from 1903 until 1911 he served on many important committees. He was Chairman of the International Commission on the Control of Bovine Tuberculosis, from 1909 until 1915.

It was mainly through the efforts of Dr. Rutherford that the University Commission caused the Ontario Government to take over the Ontario Veterinary College and place this institution under the auspices of the Provincial Department of Agriculture and the University of Toronto, at the same time raising the entrance requirements and materially enlarging the curriculum.

While he was Veterinary Director-General, Dr. Rutherford realized the necessity of having a reasonable number of French-speaking inspectors for the work of the Health of Animals Branch, due to the fact that there were between two and three million French-speaking people in Canada. At that time the Faculty of Comparative Medicine of Laval University enjoyed the unique distinction of being the only veterinary college in America where instruction was given in French. With the thought of assisting this institution to turn out highly qualified

veterinarians, Dr. Rutherford brought it about that two of the professors at the college were sent to France, to take special courses, one at Alfort, under Professor Barrier, and the other at Lyons, under Professor Arloing.

In recognition of his services to the advancement of veterinary science the University of Toronto, at a Special Convocation held on June 3rd, 1920, conferred on Dr. Rutherford the honorary degree of Doctor of Veterinary Science, he being the first to receive this distinction from the University of Toronto, which is sufficient evidence of the high character of the honor.

Dr. Rutherford was truly a great statesman, broad-gauged, courageous and possessed of wonderful judgment. It is not generally known that he was the author of the Grain Act, regarded as one of the best pieces of legislation ever enacted by the Canadian Parliament. The creation of the Railway Board was largely due to his efforts, when a member of Parliament. He was Chairman of the Reindeer Commission, appointed three years ago to study the possibilities of the reindeer industry. He was Honorary Associate of the Royal College of Veterinary Surgeons and Membre Correspondant of the Société Centrale de Médicine Vétérinaire de France.

The fact that he was at all times a charming and scholarly speaker caused him to be in constant demand at gatherings of all kinds, and it is said that there were very few organizations of any importance that had not enjoyed the privilege of listening to Dr. Rutherford's delightful drolleries and genial philosophy. He possessed a keen sense of humor and his ability to charm an audience with his Scotch stories was unsurpassed, if ever equalled. He was a born raconteur. Even his more serious thoughts were often expressed in a more or less whimsical way, and as such never failed to impress his hearers, who fully appreciated the fact that the fluent speaker was an equally deep thinker. His was a master mind.

In Dr. Rutherford's going his country has lost a citizen whose purity of patriotism was one of his outstanding attributes, and the veterinary profession has lost one of its most distinguished members.

Dr. Rutherford is survived by his widow, three daughters, one brother and one sister.

ADRIAN J. MITCHELL, SR.

Dr. A. J. Mitchell, Sr., died at his home in Erie, Pennsylvania, on the morning of July 5, 1923. Death was due to heart failure. The end came very suddenly and peacefully.

Born in Livingston County, N. Y., May 28, 1853, Dr. Mitchell attended the rural schools and the Springfield (N. Y.) Academy. He matriculated in the American Veterinary College, New York City, in 1874, and spent one year in this institution. In 1877 he resumed his veterinary studies in the New York College of Veterinary Surgeons.

In 1882 Dr. Mitchell accepted a position as veterinarian for Asa Burnham's racing horses, and acted in this capacity throughout the circuit. While still in this connection and located at Coney Island, he studied under that eminent veterinarian, Dr. J. A. Going, of New York City, a member of the Royal College of Veterinary Surgeons, who conferred on Dr. Mitchell a certificate of recommendation. The same year he entered the Ontario Veterinary College, but on account of severe and repeated attacks of sciatic rheumatism he was not graduated until December 31, 1885.

Dr. Mitchell located in Erie in 1888, and was in active practice there continuously up to the time of his death. He married Miss Clare Dross, of Gowanda, N. Y., in 1880. He is survived by his widow, one daughter and one son, Dr. Adrian J. Mitchell, Jr., who was associated with his father since his graduation in 1909.

Dr. Mitchell jointed the American Veterinary Medical Association in 1911.

W. H. RICHARDS

Dr. W. H. Richards died at Emporia, Kansas, March 5, 1922, after an illness of about three weeks. Death was due to heart trouble with complications. He had been a member of the American Veterinary Medical Association since 1890.

Dr. Richards was born in Newark, Ohio, September 29, 1862. He was a graduate of Granville (Ohio) High School, Denison University, and the Ontario Veterinary College, class of 1887. He immediately located at Emporia, Kansas, and practiced there for thirty-five years, his field extending into Nebraska, Missouri and Oklahoma. Before the late war he imported Percheron and Belgian horses, and had built up quite a nice business in this line.

GEORGE F. WESTCOTT

Dr. George F. Westcott, died at his home, in Portland, Maine, July 27, 1923, after a long illness. He was fifty-four years of age. About a year ago he underwent an operation, in Boston, but received little relief. He continued to fail, although he managed to attend to his practice up until within a week of his death.

After his graduation from the American Veterinary College, in 1897, Dr. Wescott returned to his native city, Portland, to establish a practice there. He conducted a large veterinary hospital, and for the past eleven years had one of his sons, Henry B., associated with him.

Dr. Westcott joined the American Veterinary Medical Association in 1904. He was an ex-President of the Maine Veterinary Medical Association, a member of the Portland Farmers' Club, and an agent of the Maine Humane Society. He is survived by his widow, three sons, a sister and three brothers.

EDWARD ROY FAREWELL

Dr. E. R. Farewell, of London, Ontario, died suddenly in mid-ocean, of heart trouble, on July 20, 1923. He was in charge of a shipment of Canadian Store cattle, on the S. S. *Canadian Mariner*, en route from Montreal to Cardiff, England. He was apparently in good health when he embarked, and died suddenly, without exhibiting any symptoms of illness.

Dr. Farewell was born at Drayton, Ontario, June 20, 1879. He attended high school and later the Ontario Veterinary College, from which institution he graduated in 1902. He practiced his profession at Drayton, Ontario, until 1909, when he entered the service of the Health of Animals Branch. He was joined in marriage to Miss Mae Stephenson, of Elora, Ontario, in 1906. She survives him, with two young children.

Dr. Farewell was a prominent and highly respected citizen, and a highly valued officer of the Health of Animals Branch. He was a Mason, a member of the Ontario Veterinary Association, and of the American Veterinary Medical Association, which he joined in 1919. His brother, Dr. Frank Farewell, is president of the Ladies College, at Whitby, Ontario.

BIRTHS

Dr. and Mrs. W. C. Verploeg, of Pella, Iowa, a daughter, Phyllis Jean, June 24, 1923.

Dr. and Mrs. J. C. Luckeroth, of Seneca, Kansas, a son, Joseph Frank, June 16, 1923.

Dr. and Mrs. H. A. Hoffman, of Yellow Springs, Ohio, a son, Rogers Taylor, June 10, 1923.

Dr. and Mrs. Paul F. Scott, of Newmarket, Ind., a daughter, Margaret Louise, July 14, 1923.

Lt. and Mrs. Charles M. Cowherd, of Fort Sam Houston, Texas, twin boys, Robert Mitchell and Richard Mansur, July 28, 1923.

MARRIAGES

Dr. James S. Glover to Miss Mildred Capsey, June 6, 1923, at Toronto, Ont.

Dr. Lionel McI. Heath to Miss Nellie Stansbury, June 16, 1923, at Toronto, Ont.

Dr. Vernon A. Holby (U. P. '16) to Miss M. Ethelyn Lickley, June 30, 1923, at Cold Springs, N. Y.

PERSONAL

Dr. Harold S. Brundage (Chi. '15) is now at Georgetown, S. C.

Dr. C. C. Page, of Fostoria, Ohio, is a candidate for mayor of his city.

Dr. John A. Jaeger (McK.'16) has left Elk River to locate in Willow River, Minn.

Dr. John P. McCoy (Ont. '01) of Minden City, Michigan, is Clerk of Minden Township.

Dr. E. A. Brockmeier has located at Mapleton, Minn. He was formerly at Sanborn, Minn.

Dr. R. F. Bourne (K. C. V. C. '06) is reported as having recovered from his recent serious illness.

Dr. L. F. Vaughn, (K. C. V. C. '16) has removed from Santa Barbara to Glendale, Calif., Box 444.

Dr. Wilson Huff (Ont. '85) acts in the capacity of Meat and Milk Inspector for the City of Rome, N. Y.

Dr. H. A. Hoffman (K. S. A. C. '17) is Bacteriologist on the staff of Antioch College, Yellow Springs, Ohio.

Dr. C. D. Lash (K. C. V. C. '10) is now at Rosendale, Missouri. He was formerly located in St. Joseph.

Dr. Rex D. Bushong (K. S. A. C. '21) has been appointed Sanitary Officer of the City of Manhattan, Kan.

Dr. R. H. Tesdell (Chi. '17) has returned to Huxley, Iowa. He has been at Dayton, Iowa, for some time.

Dr. F. D. Egan (Ont. '23) is associated in practice with Dr. Chas. H. Greenfield (Chi. '12), of Detroit.

Dr. J. J. Frey (K. S. A. C. '14) is Superintendent of Dairy Service, California Department of Agriculture.

Dr. Charles A. Pyle (K. S. A. C. '07) is teaching vocational agriculture in the high school at Columbus, Kansas.

Dr. Kenneth G. McKay (Wash. '21) is Secretary of the Stevens County (Wash.) Livestock and Fair Association.

Dr. Lynn R. Cantwell (K. C. V. C. '16) of Alliance, Nebr., has been appointed State Veterinarian of Nebraska.

Dr. John T. Wilson (K. S. A. C. '10) has left Seiling, Okla., to take up a new location, at Pawnee, in the same state.

Dr. Meier Brodner (Corn. '20) has been transferred from Omaha, Nebr., to Brooklyn, N. Y. Address: 18 Amboy St.

Dr. C. E. Ranney (K. C. V. C. '18) is Chief Veterinarian for the Kaw Valley Serum Company, Kansas City, Kan.

Dr. J. F. Jansen (Corn.'15) has left Stamford, N. Y., and is now located at Oneonta, N. Y. His address is 68 Spruce St.

Dr. George Kernohan (K. S. A. C. '12) is taking post-graduate work in bacteriology at the Pennsylvania State College.

Dr. John Hoberg (Cin. '06) has accepted a position in the Dairy and Food Division of the Board of Health, Detroit, Michigan.

Dr. O. J. Phelps (Cin. '15), of Lexington, Ky., writes that he gets "a great deal of pleasure and also information from the JOURNAL."

Dr. Benj. H. Yenner (K. C. V. C. '05) has been transferred from Detroit. to Sioux City, Iowa. His address is 616 Virginia Avenue.

Dr. Howard H. Custis (U. P. '07) has given up his practice at Lajara, Colo. His present address is 221 South 41st St., Philadelphia, Pa.

Dr. C. S. Parks (Ind. '21), formerly of Cambridge, Vt., has accepted a new position and is now located at Albemarle, N. C., Box 643.

Dr. J. W. Brown (K. S. A. C. '12) has secured a patent for a combination dog collar and muzzle. The latter may be detached, if desired.

Dr. W. E. Muldoon (Corn. '13) has resigned his position as Professor of Veterinary Medicine, at the Kansas State Agricultural College.

Dr. Ray N. Parker (K. S. A. C. '17) formerly of Douglass, Kansas, is engaged in the live stock business at Clearwater, the same state.

Dr. Harry T. Moss (Cin. '05) has opened a new hospital at 640 South Main Street, Dayton, Ohio, devoted entirely to small animal practice.

Dr. H. N. Thompson (K. C. V. C. '95) is General Supervisor for the Western Weighing and Inspection Bureau, at the Kansas City Stock Yards.

Dr. L. A. White (Iowa '14), formerly of Gaza, Iowa, is now located in South St. Paul, Minn. He gives his address as Hillcrest Apartments, C-4.

Dr. F. H. Thompson (Chi. '02) has been transferred from Des Moines, Iowa, to Eugene, Oregon. His present address is 1626 Hilyard Street.

Dr. H. M. Martin (U. P. '16) recently received the degree of Master of Science from the University of Nebraska. He majored in parasitology.

Dr. E. F. Kubin (K. S. A. C. '09), of McPherson, Kansas, has been appointed a member of the Kansas State Board of Veterinary Medical Examiners.

Dr. Frank J. Baker (Corn. '05), Meat and Milk Inspector of Gouverneur, N. Y., has been appointed County Veterinarian for St. Lawrence County, N. Y.

Dr. L. H. LaFond (Mich. A. C. '23) has selected Flint, Michigan, as a location. He will specialize in small animal practice, at 2612 South Saginaw Street.

Dr. Henry C. Campbell (U. P. '02), of Philadelphia, recently suffered from a fractured ankle, received in an accident while visiting his brother at Penn's Cave, Pa.

Dr. W. G. Chrisman (Ont. '02) has resigned the position of Professor of Veterinary Science, at the Virginia Polytechnic Institute, Blacksburg, Va., effective September first.

Dr. H. T. Grossman has severed his connection with the Bureau of Animal Industry, to accept the position of Superintendent of the Newton Packing Company, Detroit, Mich.

Dr. Robert O. Biltz (U. P. '22), who has been practicing at Georgetown, Del., is engaged in state live stock sanitary control work for the Delaware Department of Agriculture.

Dr. Frederick G. Steinbach (U. P. '12) has returned from California and is again in practice at Wildwood, N. J. He gives his address as 100 W. Columbine Road, Wildwood Crest, N. J.

Dr. E. A. Schmoker (K. S. A. C. '17) has offered a prize of twenty-five dollars to the student doing the best work in Clinics, in the Veterinary Division, Kansas State Agriculture College.

Dr. John B. Taylor (U. P. '17), bacteriologist and pathologist at the South Dakota Agricultural College, visited his home in Philsadelphia, during July, while in the East on his vacation.

Dr. Y. Takehara, of Takukimina, Ogasaguin, Shizuokaken, Japan, in renewing his subscription to the JOURNAL, writes that he has just returned home after an absence of more than six months, spent in traveling in England, France and Germany.

Dr. H. K. Wright (Mich. '15) is spending the summer in the New England States, and will return to South America in the fall. Dr. Wright has been looking after the interests of H. K. Mulford & Company in South American territory, for a number of years.

Drs. A. E. Kulp and Donald A. Eastman have dissolved their partnership at Cedar Rapids, Iowa. Dr. Eastman remains at Cedar Rapids and Dr. Kulp has located at Eldridge, Iowa, where he bought out the practice of Dr. F. H. Hasenmiller (Chi. '03).

Dr. Paul Vaughan (O. S. U. '12) has been placed in charge of the B. A. I. forces working in Ohio in cooperation with the Ohio State Department of Agriculture. Dr. Vaughan was brought to Ohio from North Carolina, when he was in charge of the tuberculosis-eradication work.

Dr. H. M. Gohn (Ont. '93), of St. Johns, Mich., was with the Knights Templar who were enroute to the recent conclave in Flint, Mich., when their special train was wrecked, near Durand. Dr. Gohn appeared to have escaped serious injury, and it was not until several weeks later that it developed that he had suffered a fracture of the coccyx.

Dr. O. V. Gunning (O. S. U. '17), writing from The Hawthorns, Tutbury, Burton-on-Trent, England, says: "I would like to take this opportunity to congratulate you on the excellence of the A. V. M. A. JOURNAL. I look forward each month to my copy arriving, not only for its sterling worth, as a practitioner's periodical, but it helps to form a link with my many friends in the profession on your side of the water."

Dr. S. Nakanishi, of Fusan, Japan, recently wrote us as follows: "I am a veterinarian, comparatively an old reader of the JOURNAL OF THE A. V. M. A., and lovely read the JOURNAL from about ten years ago continuously to now, and serving in the Chosen-Sohtokufu Institute for Veterinary Medical Research, Fusan, Chosen, Japan, for several years. I beg to offer congratulations for great development of the JOURNAL and remarkable progress of A. V. M. A."

Dr. O. E. Herl (O. S. U. '16), of the Serum-Virus Control Division of the B. A. I., located at Kansas City, has been spending the summer with his family, in Ohio. Dr. Herl was taken down with typhoid fever July 7, 1922, and confined in the hospital for eleven weeks. He returned to work only to be taken down, January 6, 1923, with "typhoid spine," a rare condition, which confined him to his bed for another eight weeks. He is now able to get about on crutches and hopes to be able to return to his work soon.

COMING VETERINARY MEETINGS

Mahoning Valley Veterinary Club, Brookville, Pa., Sept. 13, 1923. Dr. C. M. Christy, Secretary, Brookville, Pa.

Southeastern Michigan Veterinary Medical Association. Detroit, Mich., Oct. 3, 1923. Dr. H. Preston Hoskins, Secretary, 735 Book Bldg., Detroit, Mich.

Southeastern States Veterinary Medical Association. Greensboro, N. C. November 12-13, 1923. Dr. J. I. Handley, Secretary, Box 1533, Atlanta, Ga.

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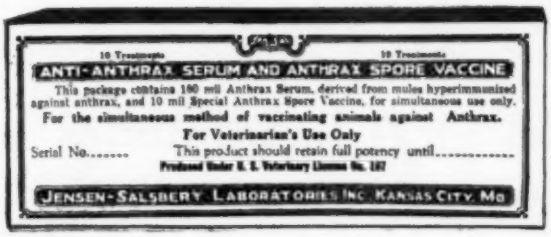
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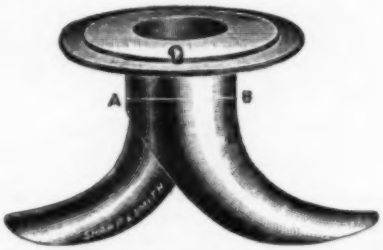

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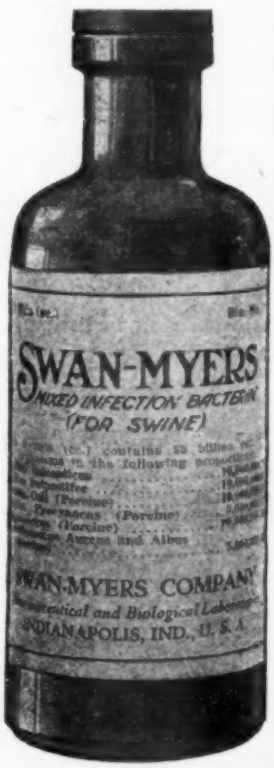

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It produces a lasting immunity, said by many to protect an animal for life. Supplied in

5-dose (25-mil) vials
20-dose (100-mil) vials
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The Mulford line of Blackleg Products also includes:

Blackleg Simultaneous Treatment
In packages containing 100 mils Anti-Blackleg Serum and 10 mils Blackleg Liquid Vaccine (10 complete doses).

Blackleg Vaccine (Liquid)
In tubes of 10 mils (10 doses)

Blackleg Vaccine (Pellets)
In tubes of 10 pellets (10 doses)
In packages of 50 pellets (50 doses)
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Blackleg Vaccine (Powder)

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So that the Veterinarian may choose any combination as indicated, our Anthrax Spore Vaccines, as well as the Serum, are packaged separately or combined.

Prices to Veterinarians

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	Net Price
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50 dose Anthrax Vaccine (Simultaneous)	10.80

Bovine Serum supplied if specified.

Anthrax Triple Vaccine

10 dose Anthrax Vaccine (Triple)	3.60
50 dose Anthrax Vaccine (Triple)	15.60

Anthrax Double Vaccine

10 dose Anthrax Vaccine (Spore No. 1 and No. 2)	.90
50 dose Anthrax Vaccine (Spore No. 1 and No. 2)	4.20

Anthrax Single Vaccine

10 dose Anthrax Vaccine (Single)	.60
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Anti-Anthrax Serum

100 cc bottle Anti-Anthrax Serum	2.10
500 cc bottle Anti-Anthrax Serum	9.00

Bovine Serum Supplied if Specified.

Anthrax Spore Vaccines

10 dose pkg. Spore Vaccine (No. 1, No. 2, Simultaneous, No. 3 or No. 4) each	.60
50 dose pkg. Spore Vaccine (No. 1, No. 2, Simultaneous, No. 3 or No. 4) each	2.40

Please write for information on Cutter's—"*Special Simultaneous*, No. 4" method it is something new in Anthrax prophylaxis.

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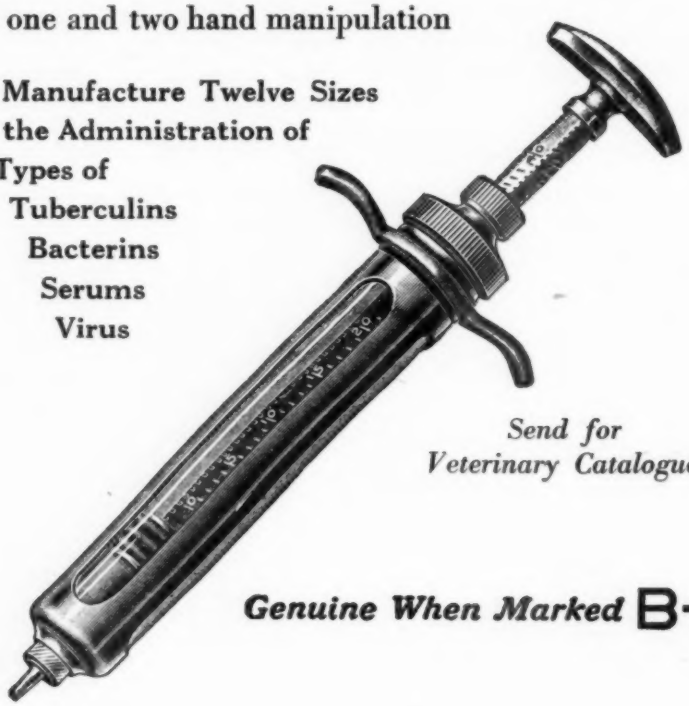

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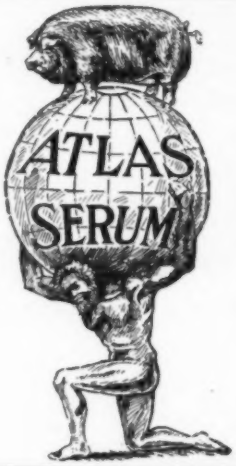

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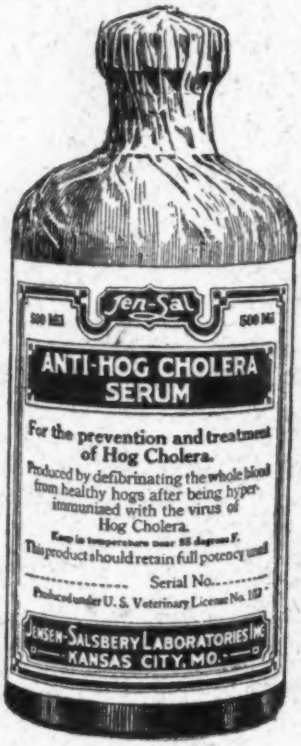	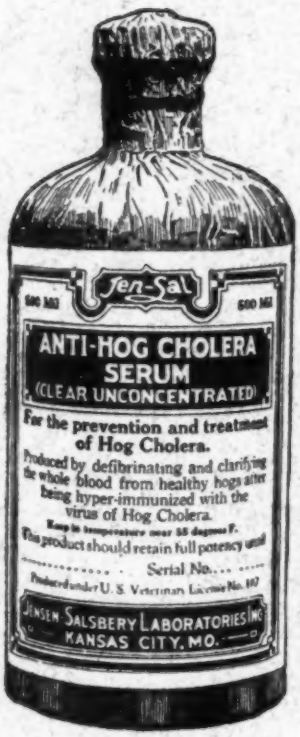	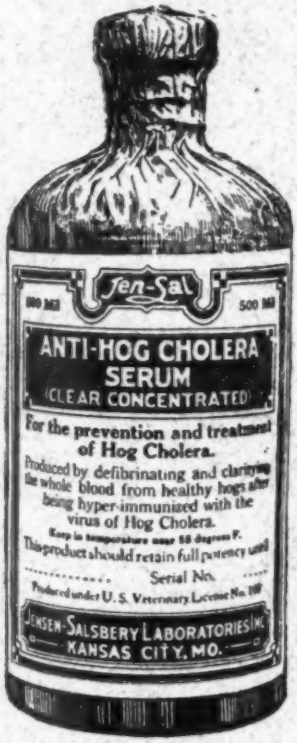
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